PHILADELPHIA, JULY 30, 1881.

ORIGINAL COMMUNICATIONS.

WEAK EYES IN THE PUBLIC SCHOOLS OF PHILADELPHIA.

*THE REPORT OF THE COMMITTEE ON EXAMINATION OF THE EYES OF THE CHILDREN IN THE PUBLIC SCHOOLS OF PHILADELPHIA.**

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MR. PRESIDENT AND GENTLEMEN,—On June 22, 1878, I was honored in the reception of the following letter from the Recording Secretary of the Philadelphia County Medical Society:

"S. D. RISLEY, M.D.:

"DEAR DOCTOR,—At the stated meeting of the Philadelphia County Medical Society, held June 18, 1878, you were appointed chairman of a committee under the following resolution:

"WHEREAS good vision is of great importance in the career of every individual, its defects insuring more or less hindrance to success in life;

"AND WHEREAS many of these defects of sight, notably myopia, are caused or made progressive during school life, as is set forth by numerous investigators in other cities both in this country and in Europe;

"AND WHEREAS it is believed that proper attention to the lighting, seating, hours of study, character of type in text-books, etc. etc., will do much to obviate defects of sight:

"*Therefore Resolved*, That the Philadelphia County Medical Society respectfully request the School Board of Philadelphia to extend every possible opportunity to a properly authorized member or members of the Society to examine the eyes of the children in the public schools of Philadelphia, and to investigate all matters pertaining to their vision and the preservation of the same.

"The committee consists of five, as follows: yourself, chairman, A. Nebinger, L. Brewer Hall, A. G. Heyl, J. Collins.

"Very respectfully,

(Signed), "H. LEAMAN,

"*Recording Secretary.*"

Immediately on the receipt of this communication a meeting of the committee was called for consultation, resulting in the attendance of Drs. Hall and Collins, and a card from Dr. Heyl, declining to serve upon the committee.

A copy of the preamble and resolution was sent to the Board of Public Education for their consideration. The request conveyed in the resolution was freely granted, and the hearty support and co-operation of the Board assured. The proceedings of the Board were, as usual, published in the daily papers, and the great interest felt by the community in the work of your committee was at once manifested. The chairman of the committee was forthwith waited upon by numerous representatives from the various newspapers of the city. A long editorial notice of the nature and motive of the work proposed by the Society appeared in the *Philadelphia Press* of September 30, 1878, which closed with a request for the support and earnest co-operation of the teachers and parents. Many letters were received from private individuals, some of whom were the parents of children attending the public schools, tendering advice, making suggestions, or expressing gratification that so important a work had been undertaken. In this manner was indirectly expressed a deep anxiety regarding the vision of the school-children. Thus under favorable auspices the work was begun early in October, 1878.

At the request of Dr. Nebinger, the first examinations were undertaken at the George W. Nebinger Grammar School, in the southern section of the city. The directors' room was placed at the disposal of the committee, and everything possible done to facilitate their labor. It is appropriate that the thanks of the committee be tendered to Miss Bryan and Mr. Sharp for their kindness and courtesy in aiding your committee,—the former the principal of the Girls' Grammar, the latter the principal of the Boys' Grammar School, both of which meet in the same building.

The *personnel* of the committee as it appears upon the minutes of the Society has during the progress of the work been subjected to a number of changes. As already mentioned, Dr. Heyl did not accept the appointment upon the committee. It was understood that the part of the work falling to Dr. Nebinger was to look after the interests of your committee in the Board of Public Education. Dr. Collins very soon found that the demands of his private practice made it impossible for him to aid regularly in the work of the committee: so that Dr. L. Brewer Hall and myself were left with a

* Read before the Philadelphia County Medical Society, April 13, 1881.

work of no little magnitude resting upon us. In order to further the work of the committee, it was desirable that more aid should be secured; and we were successful in securing the valuable assistance of Dr. James Wallace, one of the assistants in the Eye Dispensary of the University Hospital, Dr. Heilman, of the Philadelphia Dispensary, and Dr. Eskridge. The thanks of the committee are justly due and are hereby tendered to these gentlemen for their skilful aid and the untiring diligence which for two school years, three times each week, found them at their post of labor. During the third year Drs. Francis M. Perkins and Gordon M. Christine generously consented to assist in the work, Drs. Wallace, Heilman, and Eskridge finding it impossible to continue their labors with the committee. Finally, Mr. President, I am indebted to Dr. B. Alexander Randall, who has been almost my sole assistant in tabulating the extended observations and in the preparation of this report, a labor the magnitude of which has exceeded very far my anticipations as well as my strength, when added to numerous other cares.

In presenting this report, Mr. President, I beg leave to state that the most that can be claimed for it is a report of progress. In the first place, we have been able to study the eyes of a very few hundred children, while the field before us contained upward of seventy-five thousand.

The opinions herein expressed, although seemingly justified by the collated facts, are not to be regarded as final; since a still more extended observation might make it necessary to revise too hastily formed judgments. During the progress of the examinations it has been found necessary to relinquish opinions before entertained regarding many things in the educational methods pursued in the public schools of Philadelphia; yet it is believed the opinions which have been formed should have some weight in the minds of the educators and those who direct their labors.

Having thus called attention briefly to the history of the formation and work of the committee, I ask your careful consideration of the motive of the work undertaken, and the important questions it was hoped the examination of the eyes of the school-children, during their educational process, might solve.

S. D. Risley, M.D.,
Chairman of Committee.

Having in view the great importance of good vision to the student, it is justly a matter for surprise and condemnation that so little care has been manifested by parents and teachers. Indeed, they seem to have been in most cases quite unmindful of the condition of vision in the pupils they propose to educate. Our children are sent to school without even the most cursory inquiry as to whether their eyes are fitted to perform the important and arduous duty before them in the long educational process; this, too, in the face of the fact that they are to be the most important agent in the acquisition of knowledge. The utmost attention is given to the teeth, lest through neglect they should decay; but the eyes are allowed to enter upon the important duties of school life without a thought of their welfare. Yet the importance of such supervision can hardly be overstated.

Perfect eyesight is not only necessary for the successful performance of the ordinary school duties, but has much to do in the formation of both the moral and physical characteristics of the individual. The boy who is constantly subjected to the painful eye-strain required to overcome an anomaly of refraction cannot, other things being equal, compete successfully with his more highly favored companions with normal eyes. Two courses only are open to him. He may by dint of perseverance and pain contend successfully for the prizes of school life; but he succeeds at the expense of injury to his eyes. On the other hand, finding the struggle a painful one, he retires from the unequal conflict, and is found, still a mere youth, contending for the rewards of life in mercantile or other pursuits. If compelled by parental authority to remain at school, the task, at best a difficult one, is either neglected or necessarily so imperfectly performed that it sooner or later becomes an impossible one. The class of which he is a member advances step by step from the rudiments to their application in the acquisition of real knowledge; but with each step he finds the difficulties thickening about him, since a knowledge of the rudiments is necessary to a proper understanding of what he is now expected to learn. Understanding these imperfectly, it soon becomes impossible for him to go on successfully: so he proceeds in a dazed way, deceiving his teacher and his parents, such deception being necessary to keep him from utter

disgrace. The book is smuggled into the recitation-room and slyly consulted to make up for deficiencies in preparation; or, at best, the memory instead of the understanding is called into action. Conscious himself of the inferior and unworthy position he occupies, he loses that self-respect which is always the bulwark of an honorable man, and finally passes out into the world with only the semblance of an education, and with elements in his character which are in a measure the creation of his defective vision,—elements of character which shall ever afterwards prove a barrier to the highest success; for the best prizes fall only into the lap of the honorable citizen. It is true that this may be regarded as the picture of an extreme case: it is one, however, which is too frequently exemplified in our midst. In a minor degree the same principle is operative in thousands of the children attending our public and private schools to-day.

If near-sighted, the effect over the character of the individual manifests itself even earlier in life, possibly in a less pernicious way so far as the moral character is concerned, but with a deleterious effect over the physical constitution, mental habits, and manners of the individual. The peculiarities of the near-sighted person are so marked that, if the defect has not been corrected early in life by optical means, the most casual observer recognizes him among his fellows. The proneness to sedentary pursuits, and the habit of abstraction and apparent disregard of friends and acquaintances in places of public resort, are facts noticed and condoned. That these characteristics of the myope depend upon his near-sight we need not go far to show. The near-sighted boy, *e.g.*, cannot fairly compete with his more fortunate fellows in the sports of the playground, since their requirements lie beyond the range of his vision. An attempt at cricket or base-ball must necessarily subject him to the ridicule of his companions, since, thrown even from his own hand, the ball soon leaves his range of clear vision and he is unable to judge of the accuracy of its flight. In returning, it comes within his limited area of distinct sight, if perceived at all, so suddenly that the most dexterous movements cannot compensate for the loss of time in perceiving its approach. Thus, in consequence of a physical defect, of the existence of which he may himself be entirely ignorant, he is driven from the campus by the ridicule or neglect of his fellows,—a very natural result of his inaptitude. The invigorating out-of-door sports are one by one sacrificed to more sedentary pursuits. He reads constantly, not as a matter of duty or from a desire for knowledge, but because it is the only pastime left open to him. The habit grows upon him, and he reads apparently for the sake of reading, with no thought of the acquisition of knowledge. The constant reading gives no time for reflection or the proper comprehension and digestion of what is read. A condition of mental engorgement is thus brought about, which is as foreign as possible to a true educational process. Such a child is less troublesome than the wild and rollicking boy with his ball and bat and ruder manners, and so his sedentary habits come to be encouraged. He is regarded as studious, and too frequently as a prodigy of learning: so it constantly happens that his inordinate craving for books is fostered instead of condemned, the vain hope being entertained that in the future all this devouring shall prove the basis of brilliant literary accomplishment. He becomes retiring and diffident. Away from home amid strange surroundings the myope is hesitating and cautious. He goes out into the world devoid of that practical skill which characterizes the successful man of affairs; for it must be remembered that his defect of sight is operative at all times, not only on the college campus, causing directly his inaptitude there, but playing an important rôle in all the details of life. As the partially deaf child with good vision depends for his understanding of conversation largely upon the facial expression and movements of the lips of the speaker, and loses the lower tones and least accentuated parts of the spoken sentence, and thereby learns to talk in broken angular sentences; so the near-sighted child learns to rely upon the tones of the voice, since the facial expression of the speaker is not seen. He is thus more readily deceived, since he loses this great aid in the interpretation of individual character. He hears the bustle and noise of the busy world around him, but does not readily throw himself into the current of passing events. He hears the talk about the beautiful landscape, but it is all a blur to him. He thus, as a matter of compulsion, occupies a world of his own, constituted by his narrow range

of vision and the ideals built up from his extended reading of books, without the possibility of comparing the descriptions of the author with the realities in nature. Within this limited world it is natural that he himself should be the most prominent factor.

If then these deductions are well drawn,—and we believe they are justified by daily observation,—if not only the physical constitution but the mental habits and moral character of the individual may be subject to serious impairment and modification in consequence of defective eyesight; it becomes a matter of serious moment to every community to avoid, as far as may be, the occurrence of defects of vision, and, when present in the individual, to neutralize, if possible, the consequences of such defects.

That various defects of sight exist in eyes which are thought to be perfect by both parents and teachers, is a fact well established by the daily observation of every ophthalmic surgeon, and demonstrated by the extended observations of numerous investigators in the schools of Europe and the United States. It has been shown by these observers that one of the most important of these defects, namely, myopia, is present in very much larger percentage in the advanced classes. That is to say, it was proven that near-sight was acquired by a large number of school-children who began the educational process without such defect in their vision.

This main fact had been repeatedly demonstrated; nevertheless but little light had been thrown upon the essential cause or causes of the increase in myopia, or upon the history of the ocular changes. Based upon these facts, important suggestions, it is true, had been made regarding the hygiene of vision; the proper relation of seats and desks, sufficient light, etc., were insisted upon as important; but further than this no practical results were reached. It was therefore desirable that this investigation should, if possible, reveal something of the real cause of the myopia. That the hygienic surroundings of the pupils were not solely at fault was rendered probable by the investigations of Just, who examined the eyes of 1229 of the pupils in the two high schools of Zittau; both of which had been erected since 1866, and in which the hygienic conditions were all that could be desired. He nevertheless did not find that the excellent arrangements had in any degree lessened the percentage of increase in myopia. It was necessary, therefore,—the fact of the increase being established,—to look beyond the mere hours of study, the proper seating and the sufficient lighting of the school-room, since the most perfect arrangements in these respects had failed to arrest the increase.

The examination of large numbers of eyes in the schools had served to demonstrate the fact that myopia was more frequent in the advanced, than in the primary classes; and thus fully justified the inference of an increase in the number of myopic eyes in the same class as it passed from the lowest to the highest grade; but such investigation could not give the pathological history of the change in form of the eyeball. This, however, was necessary in order to arrive at a perfect knowledge of the real cause and nature of myopia. This history could in fact be acquired only by patiently examining the eyes of a large number of the *same pupils* year after year, and carefully recording their condition as they passed from the primary classes into the succeeding higher grades. Now, such a task presented extraordinary difficulties, and was one, withal, liable to many disappointments; since, as we shall show, the pupils, in whose eyes the investigator would be most interested, are the very ones who—in this country, where education is not compulsory—are apt to drop out of the class, because of the pain and consequent inability to pursue their studies.

The same result, however, it was thought, might be reached approximately by a careful study, in a large number of eyes, of the refraction, and also of the attending conditions of health or disease as revealed by a careful ophthalmoscopic study of each individual.

That the myopic eye was generally also a diseased eye was a fact well understood, since it found demonstration in the daily experience of the ophthalmic surgeon. The collated statistics had shown not only a steady rise in the percentage of myopia, but a nearly proportional decrease in the number of hypermetropic eyes, while emmetropia remained nearly uniform. The question, therefore, very naturally arose as to *whence came the near-sighted eyes.* It was obvious that they were recruited from one or both of the other kinds of eyes; yet actual satisfactory observation of such change had been wanting up to a very

recent date. That such changes must and do take place was, however, inevitable, in view of the facts set forth by the statistics. Now, since myopia was attended with well-known pathological conditions, which without a doubt stood in the relation of cause, it was fair, reasoning *a priori*, to suppose that the conditions of disease which resulted in distention of the eyeball, or near-sight, would be manifested some time before the resulting distention. If this were true, a careful study of the condition of the *fundus oculi* in all states of refraction would furnish the strongest obtainable evidence of the source of the unhealthy myopic eye. That is to say, if it were shown by such examination that, next to myopia, emmetropia presented the greatest percentage of diseased eyes, and hypermetropic refraction least of all, it might with some show of reason be accepted as proof that the myopic eyes were recruited from the intermediate emmetropic eyes. Indeed, this might still be accepted as true if emmetropia and hypermetropia presented an *equal* percentage of disease. If, on the other hand, it should turn out that emmetropia was the condition of health, and that hypermetropia presented the highest percentage of disease, then the conclusion would be reached, not only that myopia was recruited from eyes with hypermetropic refraction, but further that, despite the comparatively small number of actual emmetropes, emmetropia was nevertheless the condition of normal refraction, since it was the condition of health. Furthermore, the added conclusion would be inevitable that an eye with hypermetropic refraction was a defective eye, and that there must be a relation of cause and effect between this defect of refraction and the diseased *fundus oculi;* and hence that with such defective refraction in a large percentage of the eyes themselves, even a perfect system of instruction, with perfect arrangement of seating and desks, with sufficient light, ventilation, etc., would not avail in checking the progress of myopia.

It was with these views in mind that the work of this examination was undertaken; and in order to give the statistics a true value the utmost care was exercised throughout to avoid inaccuracy.

The method of examination which should secure the most complete record possible of the various facts to be ascertained by the investigation was a subject which received most careful preliminary study; and that adopted has seemed to satisfy the necessities of the case. Each child, on entering, received a printed form with blanks for the recording of all the important features of the case. To one member of the examining committee was assigned the duty of noting, in proper order, the name, age, sex, residence, color of eyes, hair, and complexion, the condition of general health, and the condition of the eyes. Under the latter headings were recorded whether the eyes were comfortable or weak when used, the presence of blepharitis, conjunctivitis, corneal maculæ, or strabismus, and any other condition or fact bearing upon the general medical history of the case.

The pupil then carried the paper to a second examiner, who ascertained by the test type of Snellen, and recorded, the sharpness of vision of each eye separately. A third tested by means of Green's astigmatic cards at twenty feet as to the presence of astigmatism; and if lines were positively selected as seen better in one position than in any other, the fact and the position selected were noted, any uncertainty being indicated by an interrogation-point. A fourth then determined the near-point and range of accommodation of each eye separately with No. 1 of Jaeger's test types, and examined as to insufficiency of the internal rectus muscles at twelve inches. To determine this, a 9° prism was employed to give vertical diplopia, and then, if with Graefe's dot and line, or a modification of it by the substitution of a word of Jaeger No. 1 for the dot, there were distinct crossing of the images, insufficiency was noted as present. The central color perception was then tested at twenty feet by squares on the same scale as the type of Snellen, and the result recorded in the same manner as the sharpness of vision. The color sense was further tested in matching colored worsteds after the method of Holmgren, and any fallacy from ignorance of the names of the colors in the preceding test completely excluded.

With the paper upon which all these data had been recorded, the pupil then entered the dark room for the ophthalmoscopic examination, which was made by the chairman of your committee, aided by the facts previously ascertained. The refraction was determined with the ophthal-

moscope with all possible care, and any error and its apparent extent recorded. Then the *fundus oculi* was studied in detail, and any departure, physiological or pathological, from the normal accurately described, and, where permitting of representation, sketched upon the paper. So carefully was this done that, in the subsequent study of the work, a glance at the sketches was often quite sufficient to bring up vividly to mind the entire ophthalmoscopic picture and other details of the case, which the name, etc., did not in the least recall.

As it was upon this ophthalmoscopic determination of the condition of refraction that most of the subsequent work hinged, it will be proper to state that all sources of error were excluded with the most painstaking care. The sharpness of vision and the range of accommodation previously recorded were carefully borne in mind, and used as checks to guard against mistake; and if there appeared to be the slightest inconsistency between them, care was redoubled to find the source of variation. If the vision were normal, myopia was at once excluded, and every means was employed to remove any spasm of accommodation which might simulate it; and the examination prolonged until the apparent error had disappeared, often to give place to a distinct hypermetropia. In the examination emmetropia and health were always presupposed, and the contrary was recorded only when unmistakably present. The average time required and actually spent upon each case was twenty-eight minutes, and the record thus obtained was as complete and free from all sources of error as was possible from a single examination, unless a mydriatic were employed; and upon it I should not have hesitated to venture an opinion or prescribe treatment, had that been the object of the diagnosis.

The records thus obtained were arranged according to schools and classes and copied into a book ruled and printed for the purpose; the original papers being carefully filed away. The individual results having been thus gotten into readily available form, the work of classification commenced; and it may here be stated, parenthetically, that not until the latter work approached completion had your committee more than the most vague idea of the ultimate showing of the investigation. The records were taken a class at a time, and the number of pupils, the number of eyes, and the average age ascertained for the class. The eyes were then classified according to their state of refraction,—columns being arranged for emmetropia, hypermetropia, hypermetropic astigmatism, myopia, myopic astigmatism, and mixed astigmatism; the number of each contained in the class being placed under the appropriate heading, and the percentage to the whole number of eyes in the class computed. Within each column were arranged headings under which to record the number of eyes of that condition of refraction that were comfortable at work, and how many uncomfortable; the number with normal, and with lowered vision; how many had healthy eye-grounds, how many unhealthy; the number with conus, with central excavation, with anomalies of the ocular muscles; and the percentage of the whole number in the column represented by these carefully calculated. The total number of eyes in the School of Practice was then found to be 456; in the Grammar School, 859; and in the Girls' Normal School, 1107; making a grand total of 2422. The results thus obtained were arranged in tabular form in the order of classes and schools, from the lowest grade to the highest; and the totals for the schools worked out, with the percentages as before. An example will make this clearer. In class B, section 4, Girls' Normal School, there were 74 pupils, with 147 eyes, and the average age was 17½ years. Of these, 21, or 14.35 per cent., were emmetropic, 55, or 37.41 per cent., hypermetropic, etc. Of the 21 emmetropic eyes, 14, or 66.7 per cent., were comfortable at work, 7, or 33.3 per cent., uncomfortable, 20, or 95.2 per cent., had normal vision, 18, or 90 per cent., had healthy eye-grounds; and so on through the other groups.* Another table was also prepared, dealing with the refraction alone; and in its second part the matter of astigmatism, important as it is, has been ignored, in order to give results comparable to those of other investigators, who have grouped under the head of myopia all eyes with myopic refraction, and as hypermetropia those with hypermetropic refraction, with-

* The preceding details were prepared in the expectation that these tables would form part of this report, and have been allowed to stand, although no longer necessitated in the absence of the tables; which have been reluctantly withheld because of the practical difficulties in the way of their reproduction.

out regard to whether the error was simple or complicated with astigmatism.

To render more distinct and comprehensible the results thus obtained, the graphic method has been employed, and curves used to indicate the proportional rise and fall of the various conditions. A little study of the classes included under the headings of the two lower schools at once convinced us that the divisions they formed were accidental. The classes were therefore rearranged according to their recognized grade, as Primary, Secondary, and Grammar, while the Normal School, as a whole, formed the fourth grade. The totals and percentages of these, with the average age of the pupils of each, were then carefully worked out, and upon them the tables of curves have been based. Thus, in Table III. the horizontal lines represent the percentages, the vertical lines which they cross, the Primary, Secondary, Grammar, and Normal Schools, in the order named; the average age of the pupils of each being given below. In this as in many other parts of the report, the abbreviations Em. for emmetropia, H. for hypermetropia, and M. for myopia, have been used; and in other tables H. As. for hypermetropic, M. As. for myopic, and Mx. As. for mixed, astigmatism.

Turning to the table, then, we see that Em. was the condition of 7.01 per cent. in the Primary school, of 11.74 per cent. in the Secondary, of 11.14 per cent. in the Grammar, and of 12.28 per cent. in the Normal; a variation of slight amplitude, which shows that the proportion of emmetropia was practically the same in all the schools, but tends slightly upward. H., however, presents a different picture.

TABLE I.

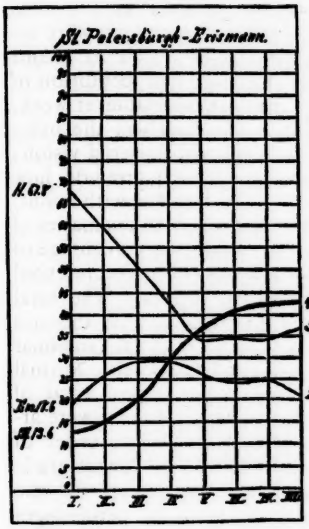


TABLE II.

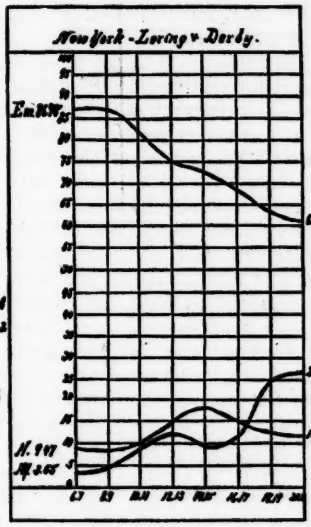
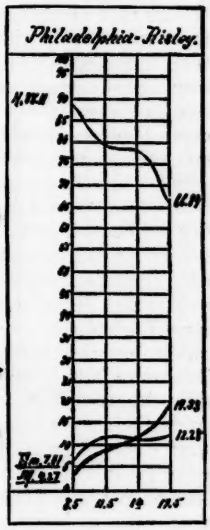


TABLE III.



Beginning with 88.11 per cent., it falls in the Secondary school to 78.92 per cent.; remaining at nearly the same level in the Grammar school, it sinks in the Normal School to 66.84 per cent., a total fall of nearly 22 per cent.

It is this fall of the hypermetropia curve, together with the nearly corresponding rise of the myopia curve, which freights this investigation with such serious meaning. Regarding the increase in myopia thus depicted, all authorities have shown, and this report will probably make still further evident, that it means at least a permanently defective vision, with its attending discomforts and disadvantages, for which our best skill can afford only palliative measures for relief. It will be noticed, then, that the myopia curve, beginning with 4.27 per cent., mounts with an almost unvarying course through 9.03 per cent. and 11.45 per cent., to reach in the highest school 19.33 per cent., an increase of full 15 per cent. That this increase of myopia is not exceptional in its extent, similar in-

vestigations are unanimous in proving. The results of two such are represented for comparison in Tables I. and II. Compared with ours, the curve drawn by Loring and Derby to represent the increase of myopia which they found in the eyes of 1133 school-children in New York City will be seen closely to agree. The smaller numbers in the divisions of classes of these gentlemen bring the higher and lower extremes into greater prominence, but leave more room for accidental variations; and their curve is distinctly less uniform. This does not, however, account for all the difference between the two showings; and even leaving out their last division, and comparing their seventh with our last, the average age in which is nearly the same, their proportion of myopia is seen to be full five per cent. higher. Another remarkable difference between the tables, and one which seems inexplicable, is that emmetropia and hypermetropia seem to have exactly changed places,—a phenomenon which has its parallel in the table of Conrad of Königsberg, but is at variance with the results of most observers. Between the curves of Erismann and ours the most distinct parallelism is evident; yet we can comfort ourselves with the observation that, injurious as our school-work is, and bad as is the outlook for the future of the eyes of our school-children, it is far better than in the Russian schools; while a comparison with the German tables would show even greater cause for congratulation. In the table of Conrad, already referred to, but not here given, the percentage of myopia in the University classes is seen to reach 62.10 per cent.;—*nearly two-thirds of the students are near-sighted.* Can we wonder that the spectacles seem almost an essential part of the physiognomy of the educated German? Nevertheless our table, like the results of all other observers, shows a nearly steady increase in the percentage of myopia during the educational process; and the evil, though not so great, is as real in America as in Europe, and its causes and the means of prevention as distinctly demand study.

But first let us gain a fuller understanding of the magnitude of the evil in its general bearings. To some persons the fact that near-sightedness is increasing may seem a matter of little moment. Objects have to be held nearer to the eyes, and a glass has to be employed to give any distinct distant vision; but, as an offset to these inconveniences, there is an idea quite prevalent that "near-sighted eyes are strong eyes," based on the fact that much later in life than other people, if at all, do myopes require the aid of a reading-glass. A study of Tables IV. and V. will by no means bear out this view. In these tables the method of representation is the same, but the eyes of hypermetropic and of myopic refraction have been further divided according as they presented the error in its simple form or as astigmatism. A column has also been placed for mixed astigmatism, although the small number of cases of this form of error of refraction leaves too much room for accidental variations for its indications to be of any great value.

In Table IV. the upper curve indicates the proportional frequency of unhealthy conditions in eyes of the different states of refraction; and it may be well here to reiterate that in this category were included only distinct departures from health. They varied from retinal irritation, with congestion of the nerve, striation of the retina, and undue redness of the entire eye-ground, to marked neuro-retinitis, choroiditis, or posterior staphyloma. The percentage of these conditions in emmetropic eyes will be seen to have been 31.97 per cent.,—a frequency which is explained in part by the fact that the eyes in the lower school were subjected to less favorable hygienic surroundings, and, further, that the other eye of the same pupil was often of a different refraction, and to it could fairly be charged the diseased condition which affected both. Only 20 per cent. of the emmetropic eyes in the Normal School presented these pathological eye-grounds; but even here the difference of refraction in the eyes of the same individual was present in a large number of cases, thus causing a higher percentage than though such difference had been eliminated. In hypermetropia the percentage passed 50 per cent.; in hypermetropic astigmatism, 76 per cent. Myopia presented disease in 82 per cent., and in myopic astigmatism 87 per cent. of the eyes were unhealthy. In the Secondary classes there was not found a single myopic eye in which the fundus was healthy; and even in the Normal School the diseased eye-grounds were present in nearly 82 per cent. of the myopic eyes. It would here be well to state that while some of the

classes in the Primary and Secondary schools had bad hygienic surroundings,—and in the Grammar schools the arrangements were not the best,—in the Normal School the greatest possible care had been given to the lighting and seating of the class-rooms, with the result of making them as nearly perfect as possible in the present state of knowledge of the requirements. Yet, in spite of this and of the fact that the pupils were much older, and therefore, as we shall show, less susceptible to unfavorable circumstances, the showing for myopic eyes was almost as bad as in the lower schools.

Turning now to a special form of disease of the eye-ground, known in its fully-developed condition as the "myopic conus," or "posterior staphyloma," and long recognized as of more or less serious pathological import, though of uncertain causation, let us trace its relation to the errors of refraction. The lower curve of Table IV. shows that this was found, often only in its incipient form, in 13.15 per cent. of the emmetropic eyes. In hypermetropia it was found in 20 per cent., and in the cases where astigmatism was combined with the hypermetropia it rose to 45 per cent. Myopia, with which many have claimed that conus was almost synonymous, presented it in but 41 per cent., distinctly less often than hypermetropic astigmatism; and only where myopia was itself complicated with astigmatism did the percentage of conus rise higher,—there, however, to reach 60 per cent. The changes in the eye-ground to which this name is here applied are almost infinite in variety and extent; but the study of the anatomical condition and its clinical history justify the statement *that it is a limited choroiditis, of varying extent and intensity, affecting the region of the nerve-entrance, and generally manifested at the temporal margin of the optic disk, as a crescent of altered color and pigment-absorption.* The massing of pigment in the ring of choroid immediately surrounding the nerve is a phenomenon more often present than absent, and is occasionally most extraordinary in extent in the eyes of young children; and while this last fact does not exclude the possibility of pathological meaning, since marked conus has been seen in infants, it still strengthens the testimony drawn from general observations that this is one of the matters which may be set down as physiological. But when the pigment about the disk begins to absorb, we can no

TABLE IV.

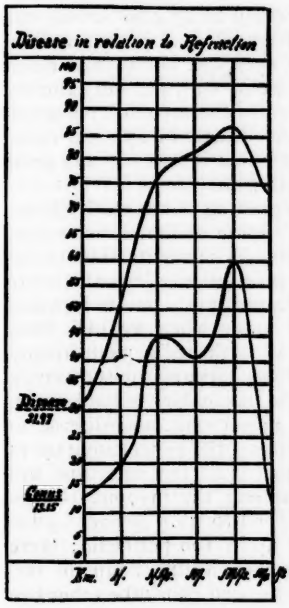


TABLE V.

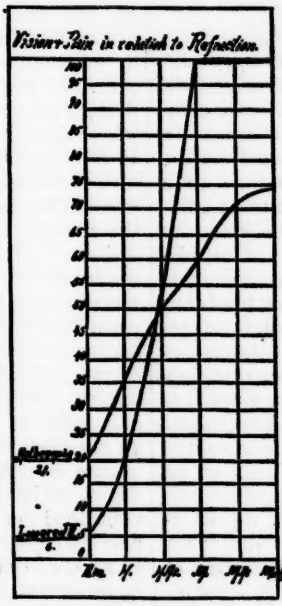
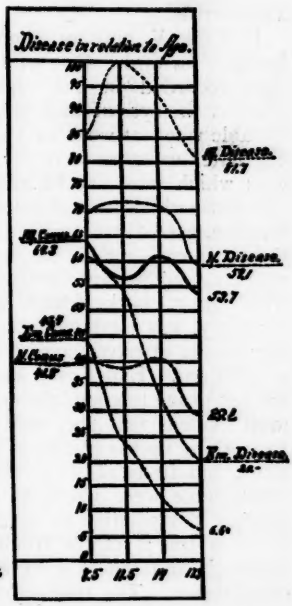


TABLE VI.



longer maintain such a view: the attending symptoms and the clinical history as derived from individuals and from classes point emphatically to diseased action with a marked and more or less permanent anatomical lesion. It is not our purpose here to enter upon the discussion of the vexed question of its causation; but we may well call attention to the emphatic pointings of the curve which shows its relation to errors of refraction, especially astigmatism.

In Table V. another important point is brought forward. One of the important facts recorded in the examination was whether the eyes of each pupil were comfortable when at work or asthenopic. In the latter category were included all the eyes which were painful after work, and also those which, though stated to be comfortable, gave distinct external evidence to the contrary,—*e.g.*, in frequent styes, blepharitis, conjunctivitis, and such affections. This latter check, which was used but sparingly, was rendered absolutely necessary by the utterly inconsistent statements of children. Experience shows that they are not prone to complain even when it is most evident that they suffer discomfort. In working up the results of the examinations, hundreds of eyes claimed to be comfortable were found with conditions making it impossible to accept the statement as true; yet the trouble was "not proven," and the eyes were recorded as comfortable. The relation of this matter of discomfort to errors of refraction needs no comment. The steady and rapid rise of the curve to 72 per cent. in myopic astigmatism is sufficient evidence of the dependence. Defective vision, as indicated by the other curve, increases with a sweep that would startle us if it were not a fact which familiarity has robbed of much of its weight. Yet it is worthy of note that there are few persons whose eyes are hypermetropic, even when a considerable degree of astigmatism is also present, who will not claim to have perfect vision. Only by an accurate test is the contrary made evident; and that, as the curve shows, only in a small percentage of the cases. The few who recognize the defect in vision almost invariably lay it to the charge of nearsight, and not infrequently seek aid from concave glasses.

Table VI. shows some points that were a genuine surprise to your committee, and, so far as we know, have never before been brought up. Here the percentages of disease in general, and of conus, are depicted in relation to age or class, and the remarks previously made regarding the hygienic surroundings of the various classes should be borne in mind, as well as the matter of the decreasing susceptibility, as age advances, to injury from such environment. Thus we see that in the Primary school the emmetropic eyes (a small number, however, in all) presented conus in 43.4 per cent., and diseased conditions in 60.8 per cent. The hypermetropic eyes had conus in 41.8 per cent. and disease in 69.5 per cent., while in 64.3 per cent. of the myopic eyes conus was present, and disease in 85.7 per cent. It is no wonder that it was with the most serious foreboding that we looked forward, when at the beginning of our work among the youngest children we found such a condition of affairs. The results obtained in the higher schools serve to lessen in some measure this impression; but it is a sad thought which arises when we look back and speculate as to the subsequent history of the individuals forming those primary classes. In the Secondary school conus had fallen to 23 per cent. and disease to 53 per cent. among the emmetropic eyes; in the hypermetropic the variation was slight, while among the myopic, though conus had declined to 56.6 per cent., disease had gone up to 100 per cent.: there was not one of them healthy. In the two upper schools diseased conditions steadily declined, except conus among the hypermetropes and myopes, which rose in the Grammar school to fall still lower in the Normal. In the Normal School, where the educational process was at or near its completion, the showing was far more favorable. Of the emmetropic eyes, only 20 per cent. were diseased, and only 6.6 per cent. of these had conus. Of the hypermetropic eyes, 59.1 per cent. were diseased, with conus in 29.6 per cent., while among the myopic eyes 81.7 per cent. were diseased, with conus in 53.7 per cent.; a showing which is an improvement, indeed, upon the preceding classes, but none the less sad for a model school. But the point exciting surprise, and perhaps forming a check to any congratulation over the preceding matter, needs to be touched upon. In Table IV. disease and conus have been shown to be most frequent among eyes of myopic refraction, and in Table III. my-

opic refraction has been demonstrated to increase as we pass from the lower to the higher schools; and yet the tendency of all the disease and conus curves is downward,—*i.e.*, upward as we pass from emmetropic, through the various defects of refraction, to myopic astigmatism, but even in eyes with these latter defects present, the curves tend downward as the age and class advance. That this should be the case among emmetropic eyes was to be expected, and even among the hypermetropic was readily explicable; but that it should be found among the myopic, lacks as yet any thoroughly satisfactory explanation. There are, however, a few circumstances which go far towards explaining this unexpected result. In the first place, the pupils in the Normal School were far more favorably situated than were those in the Grammar school. Half of the pupils in the Secondary school were in the same building and with much the same surroundings as the children in the Grammar school. The other half, however, were in the Normal School building, and they, with the Primary school, constituted the "School of Practice" of the Girls' Normal School. The arrangements in this Normal School are seemingly perfect. The quantity and direction of the light leave nothing in this respect to be desired, while the seating, placing of blackboards, and so forth, have been wisely done. The classes are not confined to any one room during the school-hours, but pass from one to another through broad and airy corridors for the successive recitations. Very little, if any, study, however, is done in the school-building, the lessons being prepared at home; a fact to be alluded to later. (The pupils of the Normal School are admitted from the various grammar schools throughout the city, the terms of admission being a certain class standing, which is the basis of promotion. Not unfrequently the pupils, when asked about the condition of their eyes, remarked that they had suffered greatly while in the grammar school, but had been more comfortable in the Normal School,—a distinct testimony to the favorable hygienic surroundings of the latter, since there was little if anything in the requirements of the course to make the difference.)

The children in the School of Practice, ranging from five and a half to twelve years of age, were, with the exception of two classes, quite as favorably placed as the pupils in the Normal School. These two classes, however, were very unfavorably situated. Owing either to the crowded condition of the building or to the necessities of classification, partitions about seven feet high, composed in part of ground glass, had been in two cases erected across a room. In the additional rooms thus secured there were no windows, sole dependence for illumination being placed upon the diffused light reflected from the walls and ceilings. At a desk in one of these rooms, on a bright clear mid-day, it was found extremely difficult to read Jaeger No. 1, in consequence of the imperfect illumination; yet in these rooms the classes occupying them not only recited but prepared many of their lessons, and this during a period of six months. The results of this arrangement on the eyes of the pupils were only too plainly revealed by the ophthalmoscopic examination. A large number of these little children were suffering from headache. They had congestion of the conjunctiva, and red and scaly lid-margins, while very many of them when asked if their eyes were troublesome replied, "They water when I study." The ophthalmoscope showed in most cases choroido-retinal irritation, and in not a few instances actual inflammation. It was here that was most frequently observed the commencement of those choroidal changes already described as occurring in the region of the optic disk. Many of the eyes were unduly sensitive to the light of the ophthalmoscopic mirror, and even during the preliminary examination would flush up and manifest their irritability by excessive lachrymation. These conditions, though worse in the two classes above referred to, were by no means confined to them. The irritable, overworked condition of a large percentage of the eyes of these young children could not but awaken the gravest apprehensions. That these classes did not show a percentage of disease very much in excess of the others is explained by the fact that many of the other classes had already occupied these same dimly-lighted rooms, having in the course of promotion passed through them. The better condition of the eyes in the secondary school furthermore suggests very forcibly the probability that many of the children with bad eyes in the primary classes had dropped out in

consequence of their eye-trouble,—a process which may be continuous through all the classes.

These facts, then, possibly furnish all the needed explanation for the downward trend of the curves in Table VI. One fact, however, has not yet been dwelt upon with the urgency its importance demands. Allusion is made to the bad condition of the eyes in the primary classes. Although the myopia curve is here at the bottom of the scale, the disease curves at eight and a half years of age are all high, even in emmetropic eyes. The lesson it is desired to impress just here is that in the eyes of these young children was being laid the foundation, in intraocular disease, for a future myopia. Protected at all other points by the watchful care of parents, they had nevertheless been subjected to the duties and cares of their early school life without a thought regarding their eyes, without the most cursory inquiry, except in rare cases, being made as to whether the eyes were fitted to perform safely their important function.

Although the limits for publication by the Society have been already exceeded, reference must be made to one other fact, since it suggests an important practical point in the architecture of school-houses. The two senior classes in the grammar school were seated in large, airy, well-lighted rooms, with every necessary appliance; but the desks were so arranged that the pupils sat facing directly three large western windows. Almost without exception these pupils were found with retinal irritation, and complaining bitterly of the source of light in the school-room. The fact that facing the light during work is a source of harm to the eye is one very generally recognized by the laity, and more than one letter found its way to the chairman of your committee, insisting upon its importance as the source of weak eyes.

There are numerous other suggestions, which should find place here did space permit, regarding the methods pursued in our public schools; but they must be reserved for more extended treatment elsewhere.

By no means, however, is the subject exhausted by the study of the eyes themselves, and by the discussion of the system of instruction in our schools. In conversation with many pupils who chanced to be suffering even beyond the average of those with bad eyes, they were free to confess that, after their lessons had been learned,—*i.e.*, those lessons they were required to prepare at their homes,—many hours, often extending far into the night, had been spent in reading. Of course the schools must not be held responsible for this evil, and a wide-spread evil it is, in this country. The ready access to public libraries, the cheap editions of works of fiction, and the great prevalence of Sunday-school libraries, etc., place a most fascinating form of literature in the reach of every one. It consequently happens that in the great majority of city homes, the younger members of the family may be seen, during the long winter evenings especially, poring, hour after hour, over a book. To add to the danger from this protracted strain upon the accommodation, the book is quite likely to be held in the lap, and the trunk and head bent forward over it; while a seat in some part of the room remote from the light is quite as liable to be chosen as a more favorable one. While these things are permitted at home, it is, of course, not just to accuse our school system. There is one of their methods, however, justly open to blame,—viz., the custom of giving tasks in the school-room which must be accomplished at home, often at the sacrifice of several hours of time which should be spent in out-of-door sports.

Among the questions of greatest interest which at the outset of this investigation presented themselves were:—

First. Would our more youthful civilization yield different results, regarding the percentage of increase in myopia, from those reached by European observers?—This was important as tending to shed light upon the possible heredity of myopia. This latter could be fully answered only by a careful study of the family history of a large number of myopes. My statistics and the records of private practice have placed this within reach, but time has not permitted its development. The question as stated has received a decisive answer.

Second. Myopia having been found to increase during school life, *did the increase come from the emmetropic eyes while they were recruited* pari passu *from the hypermetropic?* i.e., *did the eyes with hypermetropic refraction pass through emmetropia to swell the percentage of myopia?* This

involved the question as to which is to be considered the model eyeball.

Third. What relation, if any, existed between our educational process and the increasing percentage of near-sight, and to what extent were imperfections in our school-system responsible for the increase?

These questions, and many of secondary importance involved in them, have received answers in the preceding discussion, which are again summarized in the following conclusions, and are, we believe, fully justified by the preceding facts.

First. That the emmetropic eye is the model or standard eye,—since emmetropia was shown not only to remain nearly constant in percentage throughout the school life, but that it was also the condition of health, and withal enjoyed the highest acuity of vision and the greatest freedom from pain.

Second. That myopia, or near-sight, commencing in the primary classes with a low percentage (4.27 per cent.), steadily increases as the pupils pass to the highest grade in our public school system; that the percentage of increase is very much lower in the schools of Philadelphia than in the schools of Europe; that the myopic eye presents a higher percentage of disease than eyes with emmetropic or hypermetropic refraction; that even in *myopic* eyes the percentage of disease is much higher when astigmatism is also present.

Third. That hypermetropic eyes are more numerous than both myopic and emmetropic combined; that, next to myopic astigmatism, distinct lesions are most prevalent in eyes with hypermetropic astigmatism; that the increase in myopia is from eyes with already existing anomalies of refraction,—usually hypermetropic astigmatism,—since it was shown that in hypermetropic, next to myopic astigmatism, was exhibited the highest percentage of disease, which also manifested itself in pathological changes similar to, or identical with, those usually regarded as characteristic of myopia.

This conclusion is strengthened by the fact that such change has taken place under direct observation. It is by no means necessary that the distending eyeball should first pass through emmetropia. In several instances I have had the opportunity of witnessing the gradual change from hypermetropic astigmatism to myopic astigmatism, the meridian of greatest curvature being maintained. Four of these cases were published in the *American Journal of the Medical Sciences*, October, 1880. In one of these published cases a high degree of simple hypermetropic astigmatism passed through mixed to simple myopic astigmatism. Since the date of publication, the left eye has continued to distend, until at the present writing it presents compound myopic astigmatism.

Fourth. That, while there is an evident and close relation between the increase of myopia and the school life, nevertheless, having the preceding conclusions in view, *the educational methods are responsible to only a limited degree.*

This conclusion is supported by the fact so strongly demonstrated in this report, namely, the very obvious relation between the errors of refraction and the diseased conditions of the *fundus oculi*, which shows beyond dispute that the fault is not, primarily, in the system of education, however faulty this may be in many respects, but depends upon the defects which existed in the eye itself at the beginning of the school life. The conclusion, therefore, may be formulated as follows:

That, *given an emmetropic or normal eye, the probabilities are that no harm will come to it from the educational process.* On the other hand, *given an eye with an anomaly of refraction, especially astigmatism, the probabilities are, other things being equal, that the educational process will be fraught with pain and danger to the eye.*

Therefore, that before entering school the possible existence of defective vision should be excluded.

Fifth. That the probability of harm resulting from the school life diminishes with every added year of age, in all states of refraction.

This conclusion finds strong support in the condition of even the emmetropic eyes in the primary schools, as compared with those in the higher classes, as is graphically set forth in Table VI.

Therefore, that our children are placed at school at a too tender age.

Sixth. That, in view of the facts herein set forth, the great importance of proper hygienic surroundings and a wisely chosen and arranged curriculum of study is more than ever manifest.

In arranging the course of study, the principle to be kept in mind is the avoidance of protracted use of the eyes at a near point,—*e.g.*, in reading, writing, or drawing.

1630 WALNUT STREET, PHILADELPHIA, July 12, 1881.

THE EFFECTS OF THE PROLONGED USE OF ALCOHOL ON THE VISCERA, NERVOUS SYSTEM, AND ORGANS OF SPECIAL SENSE.

Read before the Philadelphia County Medical Society, May 18, 1881,

BY WILLIAM PEPPER, M.D., LL.D.,

Professor of Clinical Medicine in the University of Pennsylvania.

I SHALL limit myself, in the informal and practical remarks I wish to make this evening, to the effects of the prolonged use of alcohol in ordinary and moderate quantities, and shall not dwell on the effects of its habitual intemperate use. As to the latter, there can be no doubt as to the long list of grave lesions produced, involving the nervous centres, the serous and mucous membranes, the glandular organs, etc. Those who indulge in such abuse of alcohol are often of the lower classes, and are much exposed to the effects of other injurious influences, and of reckless habits of living. They often get syphilis; and it is a matter for careful consideration in each case how far the lesions are the result of the alcohol, and how far they may be due to other causes. Passing from these graver lesions, I will try to state in a brief and practical way the results of my own clinical observation as to the effects of the prolonged use of alcohol in moderate quantities. It seems to me, in the first place, that we must admit that there is a certain amount of alcohol that can be used daily by a healthy individual as a part of his regular diet, and which will be thoroughly appropriated and consumed in the chemical changes incident to nutrition. But, while I am in no sense an advocate of total abstinence, I must state that the more closely I watch the effects of the regular moderate use of alcohol, the more convinced do I become that the above physiological quantity, as it may be called, is a very small one, and, further, that it requires to be taken with certain definite regard as to time, quality, and degree of dilution. I do not take into account the exceptional individuals who are able to consume with apparent impunity a considerable daily ration of alcohol; but I am sure I speak for all ordinary persons when I accept the daily limit of from one to two ounces of alcohol, as laid down by Parkes and other writers. This means two or three ounces of whisky or brandy; six to ten ounces of wine, according to the kind and strength; and twelve to sixteen ounces of beer. I do not know of any accurate estimation of the amount of alcohol in the beverages sold ordinarily in our large cities, but my suspicion is that they contain an undue proportion of alcohol. Certainly the above quantities represent what I have been led to regard as the full physiological limit for the vast majority of persons. Again, it is essential that this alcohol be taken very freely diluted. My belief is that, to avoid undue stimulation of the gastric mucous membrane, the beverage should not contain more than six or ten per cent. of alcohol. Further, I am of the opinion that alcohol should be taken only at meal-times, so that even in this dilute form it shall not come in contact with the exposed mucous membrane. It seems to me, then, that we may concede that most persons may take with impunity two or three tablespoonfuls of whisky in a tumblerful of water, or four or five ounces of light sherry diluted with an equal amount of water, or eight or ten ounces of claret, daily, with the principal meal. I do not believe such use of alcohol will, in healthy subjects, cause any injurious effects on the viscera, nervous system, or organs of special sense.

It is of course understood that at the same time an ordinary amount of food and drink is consumed; but it should be remembered that with many persons a most fruitful cause of dyspepsia is the use of too much liquid at meal-times. If the alcohol be taken sufficiently diluted, it results either that a very small amount is taken or that more liquid is used than is wholesome. I have very often had occasion to observe that the regular use of more than a minimum amount of alcohol gradually led in this way to the development of a troublesome form of indigestion, with secondary derangements of nutrition. Still more is this the case if alcohol be taken in a more concentrated form, or on an empty stomach between meals. There is then a distinct tendency to the production of subacute gastritic dyspepsia, not infrequently associated with duodeno-hepatic catarrh. The degree of susceptibility varies so greatly in different individuals that the tendency to these mucous catarrhs should never be lost sight of. They are not trivial, either in the symptoms produced or in the organic lesions to which they may ultimately lead.

We are all familiar with the reflex disturbances of the action of the heart and of the cerebral circulation, and with the faulty digestion and impaired assimilation that sap the vigor of the system. Such irritation, slight though it be, will, in susceptible subjects, if allowed to continue, set up very slow changes in the gastric follicles, in the submucous connective tissue, in the sheaths of the nervous filaments, together with slight catarrhal changes of the mucous membrane of the intestine and biliary ducts. This, then, constitutes one of the chief dangers that I am in the habit of meeting with from the regular use of alcohol; and in persons whose mucous membranes are thus sensitive (and in this country at least their number is very great), alcohol should either be avoided altogether or taken absolutely and exclusively in the very small amounts I have indicated, very freely diluted, and only at meal-times.

Closely associated with the above danger is the tendency of alcohol to develop any latent gouty diathesis. I have long been convinced of the existence of a vast amount of suppressed, irregular, undeveloped, or latent gout in our American communities. It expresses itself by functional derangements, by a difficulty or inability to appropriate and thoroughly work up a proper amount of certain nutritive materials, and by a tendency to certain slow and obstinate tissue-degenerations. Sometimes nitrogenous substances are badly accepted; in other cases the starches or fats disagree most; but in nearly all alcohol is badly borne. It is very easy in such persons to call into action the morbid processes that are favored by the existence of this diathesis. If alcohol be taken by them in any considerable amount (though far within the limits of its intemperate use), or in such a manner as to interfere with digestion, or if in addition to the alcohol—which has a certain value as a quasi-nutrient—a full amount of food be taken without corresponding increase in muscular and mental exertion, the equilibrium is disturbed, imperfect assimilation and defective elimination result, and plethora, congestive states of the nervous centres and of the great glands, with subsequent organic tissue-changes of gouty character, ensue. These effects may require many years for their development if the departure from normal nutrition and the degree of activity of the gouty diathesis are slight. But I meet with too many patients in whom nervous symptoms, circulatory disturbances, or derangements of the functions of the liver, kidneys, or alimentary canal are traceable to a gouty diathesis called into activity by the prolonged use of moderate amounts of alcohol, not to feel forced to call attention to this as one of its prominent dangers. I would not be understood, of course, as implying that the very small daily amount of alcohol which I can feel warranted by clinical experience in regarding as physiological or proper does very often lead directly to such serious results. But it may do so in those who have undue irritability of the gastric mucous membrane, or a strong gouty diathesis. And, in general, I am trying to look at the matter from the stand-point of such hygienic regimen as tends to the maintenance of absolute health, the gradual extinction of inherited morbid tendencies, and the attainment of the greatest longevity, rather than from that of demonstrable serious injury directly traceable to the action of a single agent.

SYMPTOMS AND TREATMENT OF ALCOHOLISM.

Read before the Philadelphia County Medical Society, May 18, 1881,

BY JAS. H. HUTCHINSON, M.D.,

One of the Attending Physicans to the Pennsylvania Hospital.

THE consideration of that portion of the general subject of alcohol in its medical relations which has been allotted to me—viz., "The Symptoms and Treatment of Alcoholic Poisoning, Acute and Chronic"—opens up so extensive a field for discussion that it would be scarcely possible to traverse it satisfactorily, even if a whole evening had been assigned to me for that purpose. Within the brief limits to which it is necessary to confine myself, it will be possible to take a general view of it only.

The symptoms of alcoholic poisoning will vary, of course, with the amount and kind of liquor consumed, the length of time during which its excessive use has been continued, and the age and temperament of the patient. It will be convenient, therefore, to consider them under the following heads:

a. Drunkenness.

b. Acute poisoning by (large quantities of) alcohol.

c. Mania a potu.
d. Delirium tremens.
e. Chronic alcoholism (proper).
f. Dipsomania.

It would scarcely be necessary, even to an unprofessional audience, to enter upon a full description of the symptoms ordinarily presented in drunkenness. The bloated face and reeling gait of the drunkard are, unfortunately, too often seen on our thoroughfares to make any such description necessary. Moreover, drunkenness, as such, rarely comes under the notice of the physician, except in those cases where it presents points of resemblance to apoplexy. The differential diagnosis between these two conditions is sometimes difficult. Flint says the former may generally be distinguished from the latter by the odor of the breath and vomit, by the absence of stertorous respiration, by the character of the pulse, which is usually feeble and soft and increased in frequency,—not diminished in frequency and hard, as is usual in apoplexy,—by dilatation of the pupils, and, generally, by the possibility of rousing the patient sufficiently to exhibit some of the manifestations of drunkenness in the manner of speaking. But these symptoms, while reliable in many cases, will mislead in others. For the respiration is occasionally stertorous and the pupils are sometimes contracted in drunkenness, and the odor of the breath and vomit shows simply that the patient has been drinking, not that his condition is wholly due to alcohol. In proof of this assertion it is sufficient to refer to a case recorded by Hughlings Jackson, in which the alcohol impregnated not only the breath, but the urine also, and in which the patient was left to "sleep it off." He died, however, and at the autopsy a clot was found covering the whole of one hemisphere.*

In acute poisoning by alcohol, when the amount taken is very large, the preliminary stage of excitement seen in ordinary drunkenness is wholly wanting, and the patient drops down instantly insensible, as in a case reported by Dr. Golding Bird,† in which a man drank eight ounces of alcohol. The principal symptoms are profound coma, general anæsthesia, coldness of the surface, which is often covered with a profuse sweat, often cyanosis of the face, stertorous respiration, feebleness and generally excessive frequency of the pulse, and dilatation of the pupils, which are insensible to the light. Occasionally, even in cases which eventually recover, the pulse cannot be felt at all, and this pulselessness may continue for some time. Sometimes the effects produced resemble those of an irritant poison. Thus, the mucous membrane of the mouth and throat may show a whitish discoloration, as in poisoning by acids, and there may be vomiting of blood and the passage of thin, slimy, or bloody stools.‡ In other cases convulsions may precede insensibility, or alternate with periods of delirium for some time before the supervention of coma.

In regard to the condition of the pupils in the coma produced by an excessive dose of alcohol, some difference of opinion exists among authors. Dr. Ogston, who examined twenty-six cases with reference to this point, found that they were dilated in twenty and contracted in six. It is probable that the first effect of alcohol is to contract the pupils, and the secondary to dilate them. Thus, in animals narcotized by alcohol, in whom the pupils were dilated, a fresh dose always caused their temporary contraction. They are almost always dilated in cases in which stertorous respiration is present, and therefore dilatation indicates greater danger to the patient than contraction.§

In cases where the quantity taken is not so large, the symptoms are, of course, not so serious, and may consist of headache, weakness, sleepiness with inability to sleep, diplopia, restlessness, and the like.

The coma in the severe forms may last for several days, and the patient gradually sink, or death may take place within a few hours; or, on the other hand, the patient may by degrees regain his consciousness and finally recover, or else pass into a condition resembling that of ordinary delirium tremens. The prognosis, however, should be guarded in these cases, as a period of seeming health occasionally intervenes between the symptoms above detailed and death. It may be added that diabetes is produced in animals by excessive doses of alcohol.

In proposing to give the name mania a potu to a condition which differs essentially from delirium tremens, I am, of course,

* Quoted by Dr. H. C. Wood in "A Treatise on Therapeutics," Philadelphia, 1874.
† Lancet, October, 1839, p. 166.
‡ Roehm, Ziemssen's Cyclopædia, vol. xvii.
§ Woodman and Tidy, London, 1877.

aware that I place myself at variance with many excellent observers who hold that the two terms are synonymous. But it is convenient to have a name for those outbreaks of maniacal fury which are occasionally caused by excesses in alcohol, and the symptoms of which present a closer resemblance in the main to those of insanity than to those of delirium tremens. These attacks of insanity most commonly occur in drinkers with hereditary predisposition to mental disease, but are by no means confined to them. I have myself known of cases in which no such tendency could be made out. The quantity of alcohol necessary to produce the mania varies considerably with the individual, and in some persons is exceedingly small. In a few instances which have come under my observation a single glass of whisky has been sufficient to produce it, but it has then been of very short duration, while, when it is the result of long-continued excesses, its duration is much more prolonged. In the latter case the patient may have similar delusions to those presented in delirium tremens, but he is usually more violent in his manner, and does not generally show the same degree of cowardice and timidity.

It seems to me important to recognize this form of insanity, and its cause, as it demands a special treatment, under which it generally leads to recovery.

Only a few years ago delirium tremens was universally regarded as the result of the abrupt withdrawal of stimulus after it had been used for some time to excess. But, while the influence of this cause in the production of the disease in a large number of cases is still maintained by many observers of the highest authority, there are others, and it is probable that they are in the majority, who hold that it is always an effect of the direct action of alcohol upon the brain. After a careful consideration of much that has been written upon the subject, I find myself compelled to adhere to the opinion which I have formed from my own observation, that delirium tremens may arise from either of these two causes, and that the symptoms are slightly different in the two cases. That delirium tremens may sometimes occur as the consequence of the sudden cessation of the use of alcohol is frequently witnessed in the surgical wards of any general hospital. I have repeatedly seen, for instance, in the cells of the Pennsylvania Hospital, men suffering from the disease whose previous health had been good, but whose habits of free stimulation had been interrupted by the accident for which they had been admitted, and which in many cases was of so trivial a character that it would be unreasonable to attribute to shock any share in the production of their delirium, and I have seen others, presenting at first the same symptoms, in whom the outbreak of the disease was prevented by the administration of a moderate amount of whisky. The same thing may be observed in the medical wards, although not so frequently. During my last term of service at the hospital, three patients addicted to the excessive use of alcohol were admitted with erysipelas of moderate severity. They were all allowed a small quantity of whisky, much less than they had been accustomed to consume when in health, and much less than was given to some other patients who were suffering from the same disease in a much more severe form, but who were temperate in their habits. In all of these cases, as soon as convalescence was established, delirium tremens occurred.

Delirium tremens in its mildest form is popularly known as "the horrors." Its most characteristic symptoms then are tremor, restlessness, sleeplessness, and a disturbed, anxious expression of the countenance. This tremor, Anstie says, first begins in the legs, but usually escapes notice, because more difficult to detect there than in other parts. It is readily seen in the trembling of the tongue when protruded, and of the hands when extended. In this stage it is generally controllable by a strong effort of the will, and is usually worse in the morning. It is relieved temporarily by food or alcohol. With these symptoms there is also a feeble and frequent pulse, contraction of the pupils, an inability to concentrate the mind upon any subject, and depression of spirits. The patient becomes vacillating, suspicious, quarrelsome, and cowardly. If the attack has followed a recent debauch, there are evidences of gastric disturbance in the presence of furred tongue, thirst, anorexia, etc. Occasionally certain cerebral symptoms present themselves, such as buzzing, whistling, or roaring sounds in the ears. Muscæ volitantes and flashes of light occur just as the patient is dropping off to sleep. Sleep, when it comes, is disturbed by frightful dreams. According to Magnan,

the sense of the perception of colors is less acute in this condition.

The condition above described frequently ends in recovery, especially if properly treated, but in many cases glides imperceptibly into what may be described as the second stage of delirium tremens.

Second Stage.—All the symptoms of the first stage are exaggerated in this, and new ones are added. Among the most characteristic of these are hallucinations, which occur, at first, during the night only, and may often be dispelled if the patient can be amused. They are almost invariably of a disagreeable character, and when not positively painful suggest painful ideas, as in a case referred to by Magnan, in which the patient spoke of cascades which he heard roaring, and of chalets which he saw filled with people dancing and singing; but the cascades impelled him, he said, to drown himself, and the gay occupants of the chalets wished to assassinate him. The delusions generally have some relation with the occupation of the individual, or with the dominant subject of interest of the moment. Sometimes the scene of the last debauch is rehearsed, or a quarrel which took place there is renewed in imagination.*

The hallucinations of the sense of sight are most frequent. The patient sees about him devils, snakes, rats, mice, and vermin of all kinds, from which he vainly attempts to escape. Those of the sense of hearing come next in frequency. In addition to the noises mentioned as occurring in the first stage, the sufferer hears the sounds of funeral bells, and of singing and other music, generally of a mournful character. Cries and tumultuous voices torture him, even though he closes his ears against them. Perversions of the senses of smell and taste, although less frequent than those of sight and hearing, nevertheless occur, and contribute their quota towards the distress of the patient, who may be harrowed by disagreeable smells, or believe that his food is tainted, or that it contains some poisonous substance. The general sensibility also usually presents some evidence of derangement. The most common perversion of sensibility is the feeling of ants or other insects crawling over the body or under the skin, and the efforts which the patient makes to detach them are often sufficiently ludicrous. At other times he believes himself to be enclosed in a net, and spends his time in fruitless efforts to disengage himself from it. The timidity, anxiety, and fear of the first stage are intensified in this, the patient believing himself to be pursued by policemen, or by enemies who desire to take his life. In his attempts to escape from his imaginary foes he may commit acts of violence which he believes are necessary to protect his own life. In some instances, however, without having any such delusion, he is disposed to fight those around him, and to be mischievous and destructive.

Tremor, it is said, may occasionally be wanting, but it is then replaced by great restlessness. When it affects only a few muscles it does not indicate nearly so much danger, even when intense, as when all the muscles of the body are involved, especially if the tremor persists during sleep and is accompanied by subsultus tendinum, no matter how little marked it may be.† The fact that the skin is generally bathed in a clammy sweat, and feels cool to the hand, has given rise to the impression that the disease is rarely attended with fever; but this has been shown to be an error by Magnan, who has described a febrile form of the disease, and who says that in this form the temperature may rise as high as 105.8° F. Bristowe also refers to cases in which the temperature rose to 109° F. A temperature above 105° F., especially if it has risen suddenly to this point, indicates great danger to the patient. The pulse is frequent and feeble, often running as high as 140. It is dicrotic, and sometimes small and thready, sometimes soft and voluminous. The pupils are sometimes contracted and sometimes dilated, but are rarely, according to Gerhard, much contracted, except in the cases treated by large doses of opium. There is always complete anorexia, and very often there are other symptoms of a disordered digestion, such as vomiting and constipation or diarrhœa. The tongue may be covered with a thick whitish coating, or be brown, dry, and fissured, or clean, red, and glazed. The patient is constantly talking, but his utterance is usually thick and indistinct. Convulsions occasionally occur, and may leave behind them paralysis of some form, or the patient may pass from them into fatal coma. Sleep rarely comes

* Magnan.

† Ibid.

to the sufferer, and when it does occur it is not always followed, as is popularly supposed, by recovery.

This disease is in some cases difficult to distinguish from meningitis. Flint thinks a diagnosis may be generally made by attention to the following symptoms: the increase of the phosphates in the urine in meningitis and their diminution in delirium tremens, and the presence of intense headache and intolerance of light in the former. It must be remembered, however, that meningitis may be caused by excesses in alcohol, and sometimes occurs in the course of an attack of delirium tremens.

In the third and final stage the symptoms increase in severity, one hallucination succeeds another with great rapidity, muttering delirium comes on, the sweating becomes colliquative and the depression extreme, until the patient sinks into a comatose condition, which usually terminates in death.

Chronic Alcoholism.—The effects of the long-continued use of alcohol other than those just referred to are shown not less in the mental and moral debasement of the individual than in the deterioration of his physical health. The faculties of his mind are impaired just in proportion as he gives himself over to his indulgence, and this impairment shows itself especially in the weakening of memory and of judgment and in a diminution of quickness of comprehension and of power of concentration. He grows in many cases untruthful and cunning, or cowardly and apathetic, ceasing to care or to provide for his family. He is liable to suffer from depression of spirits, and may have suicidal tendencies. In this unhappy frame of mind he is unable to resist the temptation to renew his excesses, as he finds in them a temporary relief from his feeling of utter wretchedness. The appearance of the common sot is also characteristic: his face wears a dull, heavy expression, his eyes are congested and watery, and his muscles soft and flabby. Occasionally he sinks into a condition of positive dementia, from which it may be difficult or impossible to rouse him, or he may become the victim of general paralysis.

With the above symptoms there are also abundant evidences of physical derangement. Not to take up the time of the Society in detailing the various symptoms which arise from the fibrotic degeneration of the liver and kidneys, or from chronic catarrh of the stomach, the patient may suffer from constant tremor, feebleness, and shooting pains in the limbs, from pricking sensations of the skin, from numbness or tingling, from anæsthesia or hyperæsthesia, and from abnormal sensations of heat and cold.

I have included *Dipsomania* among the effects of the excessive use of alcohol, because the uncontrollable appetite which it indicates is unquestionably often the consequence of previous excesses; but it is not necessary to consider it fully in this paper, as the symptoms it presents are very much the same as those just detailed as occurring in chronic alcoholism.

Treatment.—In acute poisoning by large doses of alcohol the principal indication is at once to empty the stomach. This may often be accomplished by the administration of emetics, but in many cases it will be necessary to resort to the stomach-pump. If these means fail in restoring the patient to consciousness, recourse should be had to the usual mechanical methods for arousing a narcotized patient, such as alternate douches of hot and cold water, electricity, and counter-irritants.

It will be convenient for the sake of brevity to discuss the treatment of mania a potu and delirium tremens under one head.

In considering this question the advisability of withholding or giving alcoholic stimulus at once arises. A few years ago it was always given; now it is rarely allowed, and it is probable that it is not often, if ever, necessary. It may occasionally be administered with advantage when there is alarming prostration, but under other circumstances it is calculated to do harm. I am therefore decidedly disposed to agree with those who withhold it entirely, rather than with those who prescribe it indiscriminately. Opium is a drug which should also be given only when the indications for its use are strongly presented. When given in large doses, as it was in former years, in the hope of producing sleep, it was often the cause of coma or convulsions.

If the attack has come on shortly after a debauch, an emetic may sometimes be of service, but its tendency to depress should be remembered, and it should therefore be given to young and robust patients

only. Under similar circumstances, if there is much evidence of gastric derangement, I have sometimes found a mild mercurial purge of service. More important than the medicinal treatment of the disease is the administration of food to the patient in proper amount and of proper kind. Attacks may be often arrested by this means alone. I shall therefore consider it first. My friend Dr. Robert P. Harris, whose long experience in the treatment of alcoholism at the Franklin Reformatory Home gives great weight to his opinion, tells me that it is an essential part of his treatment, and that he has often given as much as two quarts of milk and the essence of five pounds of beef daily in the incipient stage of delirium tremens, with the effect of preventing its further development. These quantities are, of course, larger than is often necessary, and, indeed, larger than will usually be borne. Milk is to be preferred to all other forms of nutriment, and will be generally retained if given in combination with lime-water. If the stomach rejects it, however, as it will sometimes do, beef-tea will be found to be the best substitute. When this is also vomited, it will be necessary to have recourse to nutrient enemata. To relieve his thirst the patient may be allowed to suck small pieces of ice, or to take moderate draughts of water, since large draughts are very apt to provoke vomiting and retching. Frequently the aërated waters are very acceptable to the stomach.

At the Pennsylvania Hospital we are accustomed to give our patients the bromide of potassium in doses of gr. xx–xxx every two or three hours, with a dose of chloral gr. xx, repeated, if necessary, at night, and rarely any other medicines. Occasionally a hypodermic injection of morphia is administered; but this does not form an essential part of the treatment. During convalescence a tonic is given,—sometimes quinine, and sometimes one of the tonic tinctures; but the former is preferable. Dr. Harris uses the bromide of sodium instead of the bromide of potassium, and does not prescribe chloral, but otherwise his treatment is essentially the same as ours.

Other drugs which have been given in the treatment of delirium tremens are digitalis, valerian, assafœtida, Hoffmann's anodyne, camphor, and chloroform by inhalation. The latter is a dangerous remedy, and of the other remedies digitalis alone merits serious consideration. While I should myself hesitate to give it in the large quantities recently recommended, I have seen it do good in moderate doses, not only in the condition pointed out by Fothergill and others, *i.e.*, when the pulse is compressible, rapid, and fluttering,—in fact, when there is evidence of cardiac distention, accompanied by great nervous prostration,—but also when the symptoms indicate the presence of serous effusion in the arachnoid cavity.

Some authors advise that the patient should not be confined in a cell in the early stage of the disease, but should be allowed cheerful society; and others recommend exercise as a means of retarding the development of the disease. But I should hesitate before putting into practice this advice, since rest and quiet have always seemed to me important elements in its treatment, and I have known at least one patient die from heart-clot which was evidently due to the persistent efforts of the patient's friends to make him "*walk off*" an attack. In regard to the use of mechanical means of restraint the same difference of opinion seems to exist between English and American physicians as obtains in the management of insanity. Even if it were possible to place implicit reliance upon the temper and self-control of an attendant, the plan of confining a patient in bed by means of anklets and gloves, with the addition, in very violent cases, of a strap across the chest, possesses so many advantages as a means of restraint over any other plan that I do not see how any one can hesitate in giving it the preference.

I have had a table carefully drawn up by my clinical assistant, Dr. Joseph M. Fox, which shows the results of treatment in this disease at the Pennsylvania Hospital during the twenty-three years which have elapsed since I first became connected with it. During the greater part of this time it was usual to treat the disease with large quantities of stimulus, and with more or less opium. Exactly when the change to our present plan of treatment took place I am not able to say, but it was made some time during the last ten years. It will therefore not be unfair to compare the results of treatment obtained during this period of time with those obtained during

the previous thirteen years. From the year 1858 to the year 1870 inclusive, 907 cases of alcoholism of varying severity were admitted to the hospital, and of these 73 ended in death, or about 8 per cent. Since 1870, 577 cases have been received, and of this number 14 have terminated fatally, or about 2.4 per cent. I find also that the average duration of treatment in the cases in which recovery took place has also undergone a notable diminution: thus, in the first period of time it was 7½ days; in the second, only 5½. On the other hand, the duration of the fatal cases was shorter during the second period of time than during the first. In fact, in many of them death occurred so soon after admission that the patient may fairly be assumed to have been beyond the reach of remedies when admitted.

These figures speak so loudly in approval of our present plan of treatment that comment upon them is unnecessary. Under the whisky treatment, too, it was not uncommon for a patient to become violent after his admission, even if he had not previously been so. Under the present plan this rarely happens.

The treatment of chronic alcoholism may be disposed of in a few words. It consists principally in the withdrawal of all stimulus and the substitution for it of tonics, such as quinine, cod-liver oil, and iron, and in the administration of nutritious food in a concentrated form. Of course, indications furnished by the various diseases which alcohol engenders should be met by the appropriate remedy. Dr. Marcet speaks highly of the oxide of zinc as a remedy in this condition, claiming for it not only the power of relieving present symptoms, but also that of preventing outbreaks of delirium tremens. I have no experience with it in the treatment of this condition, and will therefore only quote what Golding Bird has said of it. "It has," he says, "a specific influence on the nervous system in about the same manner as iron on the blood, especially in those cases which are unattended by any organic disease." The bromides may also be of service here; but their tendency to produce derangement of the digestive tract and anæmia, when long continued, should always be borne in mind. Other remedies which may occasionally be given with advantage are strychnine, camphor, and sumbul root.

	Whole number treated.	Died.	Cured.	Relieved.	Eloped.	Discharged by request.	Average number of days in hospital of cases cured.	Average number of days in hospital of fatal cases.	Proportion of fatal cases.	Percentage of deaths.
1858	32	4	26	0	2	0	10.8	3.	1 in 8	12½
1859	55	8	45	0	0	2	7.7	2.8	1 in 7	14½
1860	105	3	93	3	1	5	7.8	2.5	1 in 35	3
1861	66	2	57	3	3	1	5.9	4.	1 in 33	3
1862	72	8	52	4	1	7	6.8	2.	1 in 9	11
1863	69	2	60	3	0	4	7.4	4.	1 in 34½	3
1864	80	4	69	4	0	3	6.6	3.7	1 in 20	5
1865	62	7	51	0	1	3	7.5	3.1	1 in 9	11
1866	66	8	53	2	0	3	8.2	2.8	1 in 8	12
1867	71	7	61	2	0	1	8.	1.8	1 in 10	10
1868	81	10	61	0	3	7	7.2	2.2	1 in 8	12
1869	80	4	67	3	2	4	5.8	3.3	1 in 20	5
1870	68	6	49	3	1	9	8.4	2.3	1 in 11	9
1871	65	2	58	3	1	1	6.3	1.5	1 in 32½	3
1872	78	1	70	1	1	5	5.7	4.	1 in 78	1¼
1873	45	0	34	6	3	2	4.7	0.	0 in 45	0
1874	69	1	61	2	4	1	5.8	1.	1 in 69	1½
1875	56	2	48	1	1	4	6.1	1.	1 in 28	3½
1876	81	2	62	6	3	8	4.6	2.	1 in 40½	2½
1877	65	1	56	1	4	3	4.3	1.	1 in 65	1½
1878	56	0	53	0	1	2	5.1	0.	0 in 56	0
1879	25	2	22	0	0	1	7.	7.5	1 in 12½	8
1880	37	3	31	1	2	0	6.	5.	1 in 12⅓	8

ARE THE ADDUCTOR FIBRES OF THE INFERIOR LARYNGEAL NERVE MORE APT THAN THE ABDUCTOR FIBRES TO RECOVER FROM DISEASE OR INJURY INVOLVING THE ROOTS OR TRUNKS OF THE MOTOR NERVES OF THE LARYNX?

BY LOUIS ELSBERG, M.D.,

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THE leading article of the July issue of the *Archives of Laryngology* is entitled "Clinical remarks on the proclivity of the abductor fibres of the recurrent laryngeal nerve to become affected sooner than the adductor fibres, or even exclusively, in cases of undoubted central or peripheral injury or disease of the roots or trunks of the pneumogastric, spinal accessory, or recurrent nerves. By Felix Semon, M.D., M.R.C.P. London." I have had occasion to read that essay very carefully, and can from my own clinical observations bear ample testimony to the correctness of the positions taken. The very curious and important fact, ably discussed by Dr. Semon, though not new or entirely unrecognized, is now more prominently than it has hitherto been pressed upon the attention of laryngologists. A rare "companion" fact, the publication of which is particu-

larly timely in view of the discussion to take place at the coming International Congress, is embodied in the question which heads this communication. I answer the question in the affirmative. So far as I know, it has not before been alluded to.

A case illustrating the point is the following. C. B. C., when 15 years old, belonged to a base-ball club at school, in which he took much interest. In May, 1879, while practising for a match game, on throwing a ball with all his strength, he suddenly felt a sharp pain in the region of the thyroid cartilage. During some days thereafter, he also noticed, in playing hard, a sensation like an electric shock down the left arm. Twelve days after the first sensation the match game came off, and while he was excited, hot, and thirsty he took large quantities of iced water and ice-cream, which shocked him considerably. Soon after he got violent hiccough, and became unable to swallow and to speak. Nevertheless, he managed for nine days to get some food, entirely liquid, down by a swallow or two at a time. Then feeding with the stomach-tube had to begin, which was continued for three weeks. His left extremities, especially the arm and hand, had become weak, and he was deaf in the left ear. Gradually he improved; but just as deglutition and phonation became better, inspiration gradually became worse, so that after several dyspnœic spasms (one in July and one in August) his breathing six months later (loud, stridulous, and only six or seven times per minute, February 1, 1880) necessitated tracheotomy. Many very interesting features of this case (such as that from the first the sensibility of the larynx and pharynx was greatly diminished, and that gradually hyperæsthesia involved the left, first upper and then lower, extremity, etc., etc.) I pass over, as the case will be published hereafter in detail. He was seen by many physicians, but the gentleman who mainly had and still has him under exclusive care is Dr. W. E. Ford, of Utica. Dr. Hutchings, of Utica, performed the tracheotomy.

In this case there was at one time, on account of complete paralysis of both the inferior and superior laryngeal nerves, so-called "cadaveric position" of the vocal band. It may be worth while to say that this designation is sometimes used incorrectly. Very strictly, of course, it can never be applied in the living subject; and even in the case of paralysis of the recurrent nerves—to describe which condition on account of graphicness and brevity Ziemssen introduced it—we must not quite lose sight of innervation by the superior laryngeal; but in paralytic conditions of the adductors, with perhaps sluggishness of abduction, as in hysterical aphonia, in which I have known it to be used, it is entirely incorrect. In every case in which the vocal bands cannot be brought into proper apposition, there is, in phonation, straining, coughing, etc., unavoidable *leakage* of air, a term I have long used technically in accounting for the imperfect manner in which these processes are performed.

In the case of young C. B. C., gradually the integrity of the two laryngeal nerves became to a considerable extent re-established; but the adductor muscles regained power so much more rapidly than their antagonists that at one time there was almost complete "phonatory position" of the vocal band, exactly as though the abductor alone had been paralyzed. Unfortunately, events happened which interfered with continued recovery. During relapse or increased paretic condition of all the nerves affected, the abnormal intralaryngeal equipoise was re-established, and an approach to the "cadaveric position" of the vocal band was again brought about; while since then, with renewed improvement of all the other symptoms, the position which the vocal band has assumed is again nearer the median line. The clearness of the latter demonstration of the affirmative of the question heading this communication was surprising to me.

Cases in which recovery after complete paralysis of the laryngeal muscles can be observed are very rare, but they do occur. It has been my good fortune to have seen certainly three, perhaps four, cases more or less in point; and in all the cases there occurred, with whatever obvious progress towards convalescence there was, for the time being, an increasing inspiratory dyspnœa from more or less "phonatory position" of the vocal bands, showing continuing inaction of the abductors or preponderating action of the adductors. In no case during the course of recovery has isolated or preponderating restoration of abduction taken place before the restoration of adduction.

I cannot but believe that similar cases must have occurred in the experience of

other observers, although the question involved may not have specially struck them. I have not carefully enough examined into the literature to state that no such cases have been reported. For instance, in a case to which Mackenzie* refers, there seems to have been a partial recovery illustrating the point. It was the case, reported by Dr. Hughlings Jackson,† of a man who, with the symptoms of nervous lesion and paralysis of a vocal band, had lost his voice, but could breathe. He appears to have improved, and Mackenzie reports in a foot-note that he has more lately found that, whilst some power has been recovered in the adductor, the right abductor has become paralyzed. Owing to this condition, the patient now suffers from slight though constant stridor.

I shall not attempt here to discuss the cause, or the physiological and other relations involved. I only desire to state the fact, and to elicit the publication of cases observed by others.

TRANSLATIONS.

NATURE AND PATHOGENESIS OF THE VISCERAL LESIONS WHICH FOLLOW PROGRESSIVE ENDARTERITIS OBLITERANS (DYSTROPHIC SCLEROSIS).—Dr. H. Martin (*Revue de Médecine*, 1881, No. 5, p. 391), at the conclusion of a long and exhaustive paper on this subject, gives the following *résumé*.

1. The internal coat of most of the arterioles of the organism is exposed during almost the whole of its existence to causes of irritation which tend to cause inflammation, narrowing, and consequently a proportionate diminution in the quantity of blood in circulation.

2. This progressive obliterative endarteritis begins in the first years of existence, and localizes itself, particularly in the case of young children, in certain nutritive vessels in the first portion of the aorta, whence the appearance of small patches of atheroma in this locality. Later it invades a large number of arterioles, localizing itself, however, by preference in those organs whose circulation and activities are greatest.

3. The progressive diminution of material carried to such a viscus gives rise at once to both atrophy of the important or functional elements, and proportional development of connective tissue. This sclerosis begins at as remote a point as possible from the diseased arterial trunks, where the nutrition is most insufficient. It is not preceded by lesions of the capillaries in this neighborhood. Finally the active cells in the vicinity of which it appears seem healthy and non-inflamed during the initial period and up to the time when the sclerosed tissue has taken on a notable development. "Nothing," says Dr. Martin, "proves (so it seems to us) that this is the consequence of inflammatory irritation." It is for this reason that the affection has been designated *dystrophic sclerosis*.

4. This knowledge regarding progressive endarteritis accounts for a large variety of visceral scleroses; it shows, also, the bond which, from a pathogenetic point of view, unites a certain number of scleroses. It shows, for instance, why cirrhosis should begin in such an organ rather than in such another; why, for example, that lesion of the heart which is considered consecutive to interstitial nephritis may, on the contrary, precede this nephritis; why endarteritis may localize itself primarily, or after other similar localizations (aorta, heart, etc.), in the nutritive arterioles of the posterior regions of the cord, and may there give rise to the lesion and the symptoms of ataxy; why, finally, there exists such remarkable similarity of feature between affections apparently so different.

5. Progressive endarteritis may evolve under the acute form, particularly in certain infectious diseases (diphtheria, typhoid fever). It then gives rise to rapid circulatory disturbances which may themselves alone cause death, when the organ affected is one which fills an important function,—the heart, for example.

6. The irritating particles which circulate in the blood, particularly in certain individuals (alcohol-drinkers, gouty, lead-poisoned persons), can only exaggerate and hasten the evolution of progressive chronic endarteritis. As for acute endarteritis in infectious diseases, modern theories of parasitism fit in admirably with this conception and explain its evolution naturally.

7. From a histological point of view, the proliferative lesion often begins in the endarteritis itself,—rests there localized or spreads beyond it. Sometimes, however,

* Hoarseness, Loss of Voice, and Stridulous Breathing. London, 1868, p. 30.

† Case X. Illustrations of Diseases of the Nervous System. London Hospital Reports, vol. i. p. 361.

it predominates beyond the internal elastic coating, dissociating then this coat; and in this case we must grasp the morbid process from its first phases to comprehend the point of departure of its localization and evolution.

THE EFFECT OF LONG-CONTINUED MINUTE DOSES OF MERCURY ON ANIMALS.—Schlesinger, in a prize essay published in full in the *Archiv für Exp. Path.* (Bd. xiii. S. 352), gives the following conclusions.

Rabbits, and particularly dogs, bear without harm the continuance for a year of small doses of chloride of mercury and sodium. Compared with control animals, however, they show a certain increase in weight, while examination shows a surprising increase in the number of red blood-corpuscles. In spite of this, the urine of these animals shows no change in its ordinary constituents, and no sugar or albumen present at any time.

The animals killed after taking mercury during a shorter or longer period show no disease of any organ. They only show a larger accumulation of fat in those localities where fat is usually found in dogs.

While Keyes's conclusions as to the results of small doses of mercury are thus confirmed up to a certain point, Schlesinger is inclined to doubt the tonic action of mercury thus given; for, of all the favorable effects which we are accustomed to observe after the use of that certainly active tonic, iron, none appeared to be present after the employment of mercury. In those cases where iron acts as a tonic,—that is, where the blood appears to be impoverished of its normal hæmoglobin (*i.e.*, ferruginous contents),—we see going hand in hand with the increase in the number of red blood-corpuscles a rise in the body-temperature, increase in frequency in the pulse, in the body-weight, and in the excretion of urea. In the case of Schlesinger's dogs, increase in the number of blood-corpuscles and in body-weight was not accompanied by any change in the urinary excretion.

The increased number of red blood-corpuscles, together with the greater accumulation of fat, in the animals experimented upon, appears to show that the long-continued use of small doses of mercury, together with sufficient nourishment taken, exercises a repressive influence on the oxidation process to a slight extent. Should these researches be verified, the view must be accepted that by long-continued use of the bichloride of mercury with chloride of sodium the normal disintegration of the red blood-corpuscles is hindered in healthy persons, and, in part, precisely on this account a more considerable accumulation of fat occurs.

It may be supposed, then, that small doses of mercury do not act tonically in syphilitic patients, but that, when not sufficiently large to destroy the syphilitic virus, they leave the tissues entirely unaltered, and at most favor the increase of body-weight by their influence in retarding tissue-change and the disintegration of the red blood-corpuscles.

The following assertion, based upon the researches above mentioned, may be made,—namely, that Keyes's observations are correct, but that the conclusions which he has drawn from them are without foundation.

CASE OF A TAILED MAN.—Max Bartels (*Virchow's Archiv*, Bd. lxxxiii. S. 189) gives an account of another of these curious formations. It occurred in the case of a hearty, well-formed man of 50. When undressed and leaning over, a body the size of a plum, covered with livid red skin, could be seen between the nates. It looked at first glance like a large hemorrhoidal tumor, but on separating the nates it was seen not to be connected in any way with the anus or nates, but to hang freely over it by a narrow cutaneous attachment to the upper end of the sacral notch, just over the point of attachment of the coccyx.

"Having just finished a work on human tails," says the enthusiastic Bartels, "the reader may imagine my agitation when I discovered this appendage, which occupied so undeniably the classical position of a tail. At once the hope was aroused in my mind of adding to the nineteen cases of tailed men thus far observed in Europe a twentieth,—a hope quickly dashed, however, by a further examination. If this appendage were a tail it should be congenital; but the patient asserted that it had only existed five years. However, when extirpated, the tumor had sufficient likeness in structure to pass for one." Bartels includes it under Virchow's classification as a "lipoma fibrosum cutis coccygialis pendulum." He remarks that there was perhaps a larger quantity of hair over the sacral region than is common.

PHILADELPHIA
MEDICAL TIMES.

PHILADELPHIA, JULY 30, 1881.

EDITORIAL.

THE MEDICAL REGISTRY LAW.

AT the recent session of the Legislature of Pennsylvania an act was introduced which has now, by the signature of the Governor, become a law of the State, and which is intended to regulate the practice of medicine. It reads as follows.

AN ACT

To Provide for the Registration of all Practitioners of Medicine and Surgery.

SECTION 1. *Be it enacted by the Senate and House of Representatives of the Commonwealth of Pennsylvania in General Assembly met, and it is hereby enacted by the authority of the same,* That the prothonotary of each county shall purchase a book of suitable size, to be known as the medical register of the county (if such book has not been purchased already), and shall set apart one full page for the registration of each practitioner, and when any practitioner shall depart this life or remove from the county he shall make a note of the same at the bottom of the page, and shall perform such other duties as are required by this act.

SEC. 2. Every person who shall practise medicine or surgery, or any of the branches of medicine or surgery, for gain, or shall receive or accept for his or her services as a practitioner of medicine or surgery any fee or reward, directly or indirectly, shall be a graduate of a legally chartered medical college or university having authority to confer the degree of doctor of medicine (except as provided for in sec. 5 of this act), and such person shall present to the prothonotary of the county in which he or she resides or sojourns his or her medical diploma, as well as a true copy of the same, including any indorsements thereon, and shall make affidavit before him that the diploma and indorsements are genuine; thereupon the prothonotary shall enter the following in the register, to wit: the name in full of the practitioner, his or her place of nativity, his or her place of residence, the name of the college or university that has conferred the degree of doctor of medicine, the year when such degree was conferred, and in like manner any other degree or degrees that the practitioner may desire to place on record, to all of which the practitioner shall likewise make affidavit before the prothonotary, and the prothonotary shall place the copy of such diploma, including the indorsements, on file in his office for inspection by the public.

SEC. 3. Any person whose medical diploma has been destroyed or lost shall present to the prothonotary of the county in which he or she resides or sojourns a duly certified copy of his or her diploma; but if the same is not obtainable, a statement of this fact, together with the names of the professors whose lectures he or she attended, and the branches of study upon which each professor lectured, to all of which the practitioner shall make affidavit before the prothonotary, after which the practitioner shall be allowed to register in manner and form as indicated in section 2 of this act, and the prothonotary shall place such certified statement on file in his office for inspection by the public.

SEC. 4. Any person who may desire to commence the practice of medicine or surgery in this State after the passage of this act, having a medical diploma issued or purporting to have been issued by any college, university, society, or association in another State or foreign country, shall lay the same before the faculty of one of the medical colleges or universities of this Commonwealth for inspection, and the faculty being satisfied as to the qualifications of the applicant and the genuineness of the diploma shall direct the dean of the faculty to indorse the same, after which such person shall be allowed to register, as required by section 2 of this act.

SEC. 5. Any person who has been in the continuous practice of medicine or surgery in this Commonwealth since one thousand eight hundred and seventy-one without the degree of doctor of medicine shall be allowed to continue such practice, but such person shall, nevertheless, appear before the prothonotary of the county in which he or she resides, and shall present to him a written statement of these facts, to which the practitioner shall make affidavit; thereupon the prothonotary shall enter the following in the register, to wit: the name in full of the practitioner, his or her place of nativity, his or her place of residence, the time of continuous practice in this Commonwealth, and the place or places where such practice was pursued, to all of which the practitioner shall likewise make affidavit, and the prothonotary shall place the certified statement on file in his office for inspection by the public.

SEC. 6. Every practitioner who shall be admitted to registration shall pay to the prothonotary one dollar, which shall be compensation in full for registration, and the prothonotary shall give a receipt for the same.

SEC. 7. Any practitioner who shall present to the faculty of an institution for indorsement, or to a prothonotary, a diploma which has been obtained fraudulently or is in whole or in part a forgery, or shall make affidavit to any false statement to be filed or registered, or shall practise medicine or surgery without conforming to the requirements of this act, or shall otherwise violate or neglect to comply with any of the provisions of this act, shall be deemed guilty of a misdemeanor, and on conviction shall be punished for each and every offence by a fine of one hundred dollars, one-half to be paid to the prosecutor and the other half to be paid to the county, or be imprisoned in the county jail of the proper county for a term not exceeding one year, or both, or either, at the discretion of the court.

SEC. 8. Nothing in this act shall be so constructed as to prevent any physician or surgeon legally qualified to practise medicine or surgery in the State in which he or she resides from practising in this Commonwealth, but any person or persons opening an office or appointing any place where he or she may meet patients or receive calls shall be deemed a sojourner, and shall conform to the requirements of this act.

SEC. 9. This act shall take effect on the first day of June, one thousand eight hundred and eighty-one.

The advantage to the community of such a law as the present has long been obvious, and credit is due to the framers of this act and to those instrumental in having it passed by the Assembly. The fact that an official register of legally qualified practitioners of medicine exists, and can readily be consulted, must alone serve to draw a

line of distinction between the illegal quack and the legally qualified physician which can be appreciated by all. And the severe penalty, pecuniary and personal, which attaches to any infraction of the law should, we hope, tend to make the unauthorized pursuit of medical practice a much more difficult matter than it has been in the past.

The requirements for registration are not onerous,—the moderate fee of one dollar, and the presentation of the diploma with due affirmation of its authenticity, being all that is required, save that a copy of the diploma must be placed on file. He to whom time and inclination are wanting to transcribe his diploma may without difficulty obtain a printed copy. These are, indeed, already issued officially by the University, and will, we doubt not, also be furnished by the other medical colleges.

A weak point in this otherwise admirable law is, it appears to us, the fact that no limit of time is fixed for registry beyond which the penalty may be exacted for non-compliance. The act went into effect on June 1. Are all practitioners who failed to register on that day liable to fine and imprisonment? Hardly, we should think. But, on the other hand, how long are the ignorant, negligent, and criminously inclined to be permitted to neglect registration? Indefinitely? It looks like it. We venture also to wonder how the prothonotary is to know when any practitioner has "departed this life." Must he scan the daily papers for this purpose? But, on the whole, the act is a good one, and fraught, we may hope, with advantage to the dignity and respectability of the profession and the health and safety of the community.

How to Register.—Take diploma and a printed copy thereof, with dates and names filled in, to Dr. S. B. Hoppin, the courteous functionary who has charge of the Medical Register, and whose desk is in the Prothonotary's Office, State-House Row.

PROCEEDINGS OF SOCIETIES.

PHILADELPHIA COUNTY MEDICAL SOCIETY.

An adjourned conversational meeting was held May 18, to continue the discussion on "Alcohol."

Dr. Pepper read a paper on "The Effects of the Prolonged Use of Alcohol on the Viscera, Nervous System, and Organs of Special Sense" (see p. 686); and Dr. Jas. H. Hutchinson one entitled "The Symptoms and Treatment of Alcoholic Poisoning, Acute and Chronic" (see p. 687).

DISCUSSION ON ALCOHOL (*continued*).

Dr. Jas. Tyson thought that the influence of alcohol as a direct cause of renal disease had been exaggerated by many. This error was pointed out by Dr. Dickinson in the first edition of his book, and confirmed by autopsies. The effect of alcohol upon the kidneys is trifling in comparison with the action of other causes to which drunkards are exposed. The speaker had examined the urine of men accustomed to use large amounts of whisky,—drinking a pint or more daily,—and had found it free from albumen and free from casts: this had occurred over and over again. Nevertheless, there can be no doubt that drunkards are largely subjects of Bright's disease: this, however, is not the direct effect of the alcohol, but is due to the exposure to which they are constantly subjected. Of course the kidneys can be directly affected by large doses of alcohol; but this is comparatively seldom. The explanation is that before the alcohol can reach the kidneys it has to pass the bulwark of the stomach, liver, and, more especially, the lungs, where the oxidation is very rapid: very little is left in the blood which reaches the kidneys. When poisonous doses of alcohol do affect the kidneys, they produce tubal nephritis rather than interstitial, the poison operating more like that of scarlet fever.

Dr. C. B. Nancrede confirmed the observation of the lecturer that the children of the insane are more apt to be especially affected by alcohol. He reported a case of a young man whose father was insane, and whose mother was eccentric and subject to ungovernable attacks of rage. On various occasions a single glass of stimulant had caused vomiting, followed by symptoms of mania, which passed away in a week or ten days. Both father and son presented the identical symptoms at the beginning of their outbreaks.

Dr. W. F. Stewart called attention to the increased action of the heart under the effect of alcohol, as pointed out by Richardson, of London, causing an increase of from 17,000 to 24,000 beats in the twenty-four hours. In health such extra exertion must be unnecessary and injurious. The same authority con-

cludes that the alcohol affects the blood by condensing and contracting the red blood-corpuscles.

Dr. W. R. D. Blackwood said that he had seen many cases of mania and delirium tremens, and was confident that the treatment by opium had been abused. He now relied upon bromides. Moreover, he was confident that both the acute and chronic cases are better without whisky than with it. In preference to all other remedies he held digitalis: where it has failed, it is because it has not been used in sufficiently large doses. He usually gave drachm doses, but had given as much as an ounce of the tincture, repeated every three hours, and kept up for twenty-four hours,—giving in all six or eight doses,—and considered it just as safe in these doses in delirium tremens as in ten- or fifteen-drop doses under ordinary circumstances. His cases now get well without any stimulant better than they did some years ago with stimulants. The patients do not take food readily at first, on account of the gastric catarrh; but it is of great importance to give nourishment during the early stages of delirium tremens, and milk and meat extracts should be given regularly. In conclusion, he insisted that digitalis is safe in the enormous doses mentioned in delirium tremens, and is to be preferred above all other remedies which we possess.

Dr. F. G. Gross asked the preceding speaker if he had tried the infusion of digitalis. It is strange that he had recommended withholding all stimulants, and gave a tincture in half-ounce or ounce doses six or eight times in one day. This represents a considerable amount of alcohol, and as much as is ordinarily given.

Dr. Blackwood said that he had obtained the same effects from the infusion. He did not mean to say that the tincture should always be given in such large doses where smaller ones will answer the purpose, although digitalis is well borne in large doses in delirium tremens.

Dr. R. B. Cruice said that he had treated 1008 cases of alcoholism at the St. Joseph's Hospital during the last six years. The usual treatment is to give a purgative and then capsicum (three grains every hour), which stops the craving for drink and quiets the stomach. He gives a moderate amount of stimulants, depending upon hop tea and capsicum to relieve the restlessness. The food is light,—principally milk, tea, and highly seasoned soups. When there is much vomiting and pain, a small blister is placed over the epigastrium, and in some cases he applies a blister at the back of the neck. As soon as the patient begins to eat, alcohol is stopped entirely. Out of this series of more than a thousand cases there had been but one death. Opium and morphia were not used, but bromide of potassium was given in the evening if there was persistent sleeplessness; chloral was also given in special cases, but never more than one hundred and twenty grains in twenty-four hours.

Dr. Chas. K. Mills, referring to Dr. Pepper's remarks, said that he had seen a number of cases in which alcohol had developed a latent gout, or neuralgia, and even some forms of local palsy, paresis, or spasm. No class of nervous disorders respond so well to treatment as those due to alcohol in cases of gouty diathesis.

In regard to the relation between alcohol and nervous disorder, he believed that alcohol is a cause of some of the more chronic and prevailing nervous diseases. Sclerosis of brain and cord and peripheral neuroses may be due to the abuse of alcohol; but it is somewhat difficult to decide its exact influence, because such patients have generally been the subjects of syphilis and other excesses besides alcohol. The changes observed post mortem, however, in the tissues of the nervous system are much more likely to be due to alcohol than to syphilis. Epilepsy is often developed by alcohol, and cerebral meningitis of chronic form. In the case of a man who has used alcohol for years, there is enlargement of the Pacchionian granulations, and over the median and convex surfaces of the hemispheres the pia mater is milky-white or amber color; the dura mater also shows inflammatory change,—usually internal pachymeningitis of low grade and slow formation. Whether the alcohol acts upon the affected organs primarily or secondarily he was not able to decide positively, but thought that often it did act directly.

Dr. John B. Roberts remarked that alcohol may be used as an accessory article of food with advantage when used in moderation, in the opinion of Dr. Carter, of London; but the same argument would apply to the use of arsenic in Styria. Alcohol is a poison, and could not be used with impunity. The effect of alcohol upon the special senses is seen perhaps to better advantage by those who are called upon especially to treat diseases of the eye. Retinitis is frequently attributable to this cause, especially where it is combined with tobacco; retinitis potatorum is a condition generally recognized.

Delirium tremens had been referred to as being caused by the sudden withdrawal of stimulants; but he had seen a great many cases of traumatic delirium in drunkards following injuries. The highest temperature he had observed in such a case was 108° F., just before death.

Dr. W. S. Little doubted very much if it would be possible to diagnose a case of retinitis due to alcohol from another depending upon the nervous system. In a case of alcoholism the optic nerve is "dirty," there is intense redness, the vessels slightly smaller, some retraction of the field of vision,—scotoma,—from a cause not in the retina, but due to failure in the optic nerve itself. It

would be difficult to see a retinitis except in this way.

He had seen the same tremor in the ciliary muscles which is noticed in the other muscles, and thought that the "roaches and mice" seen by the patient are due to emptying of the retinal vessels, the ciliary muscles having the same effect upon the circulation of the blood in the retina as the voluntary muscles have upon the circulation in the leg. Color-blindness he had seen caused by alcohol, which was relieved by cutting off supplies of alcohol and tobacco.

Dr. J. Ashhurst, Jr., said that one point in regard to the effect of injuries in the development of delirium tremens would bear further remark. Some cases exhibit these effects in a different way from those alluded to by Dr. Hutchinson. After injury the patients are carried to a hospital, where the diet contains no stimulants, and, as pointed out by Dr. H., they may have delirium tremens as a result. But there is a view lately advanced by Prof. Verneuil, that the injury itself acts in latent alcoholism as an exciting cause. There are cases, in fact, where, from the time of receiving the injury to the outbreak of the alcoholism, the patients are under the effects of alcohol. There is no question of want of supply. Dr. Roberts had confounded traumatic delirium with delirium tremens: the first is the result of undue reaction after shock, and may occur in perfectly temperate men. Travers well described some of these cases under the name of prostration with excitement. These cases are to be treated by a proper amount of stimulant. Delirium tremens is entirely different, and is due to alcoholic poisoning. It may occur without shock after a very slight wound, such as a scalp-wound or the amputation of a finger, or, indeed, no injury whatever. The two conditions should not be confused.

Dr. Hutchinson said in regard to the production of disease of the kidney only by the use of large amounts of alcohol, that while acknowledging the force of the observation we must acknowledge that other organs are affected through the medium of the blood,—for instance, the nervous system, as instanced by another speaker. Moreover, alcohol does not generally produce an acute form, but the chronic or latent form, of Bright's disease, in which the amount of the albumen may be small, or it may be entirely absent from the urine. Therefore it is perfectly possible that even large quantities may be used without producing albumen in the urine.

The effects of tincture of digitalis have been studied by Anstie, who attributes the good effects to the alcohol it contains, as all the experiments made with the infusion were failures. It is not safe to give such large doses as had been recommended of so dangerous a remedy.

He had no doubt of the occurrence of meningitis as a result of alcoholism, and he had reported a perfect illustration of this in the paper. Nor had he any doubt as to the production of delirium by the sudden withdrawal of stimulants, or as to its occasional occurrence after slight injuries in those addicted to the excessive use of alcohol.

PATHOLOGICAL SOCIETY OF PHILADELPHIA.

THURSDAY EVENING, APRIL 14, 1881.

The PRESIDENT, DR. S. W. GROSS, in the chair.

Specimens from a case of obstinate constipation of eighty-seven days, caused by a cancerous stricture of the descending colon. Exhibited by Dr. E. P. BERNARDY.

THE patient, male, aged 25, previous to his last illness had always enjoyed good health. About a year ago, after eating a hearty meal he lay on the floor, and while in this position a child four years old fell from the bed, striking him on the abdomen. This was followed in an hour by a free intestinal hemorrhage, which proved obstinate and only yielded after a week's treatment. Dating from this time, he suffered more or less from colicky pains, accompanied with constipation, which were relieved by purgative medicine. On July 19, 1880, after suffering for a week, and after taking several purgatives to relieve him, finding himself worse, he called in his family physician, who placed him on small doses of mass. hydrarg., ext. belladonnæ, and ext. nucis vomic. This treatment was followed by relief for a few days, when his sufferings returned with increased intensity, and constant vomiting of a bilious matter supervened. The pills were changed to powders of calomel and morphia. On July 31 his bowels were spontaneously opened, making the nineteenth day from his last passage. The abdomen now commenced to be tympanitic. The rectum was then made to take the place of the stomach, beef-tea and brandy injections being ordered.

I saw the patient for the first time on August 1, 1880. He was somewhat emaciated; pulse 120; tongue dry, but not coated, looking somewhat red and irritated; with a temperature of 101°. The abdomen was enormously distended and tympanitic; in the *right inguinal* region was an indurated mass, dull on percussion: there was no pain on the left side. On account of the indurated mass on the right side, I was somewhat dubious as to my diagnosis, but was of the opinion that I had to deal with a stricture. I simply ordered chloral hydrate with morphiæ sulph., and externally flaxseed poultices. By some misunderstanding, I did not see the case again until September 10, 1880, when I was requested to meet Dr. Hooper in consultation. The con-

dition of the patient was in every way worse: all the above conditions were increased, the spasm of the bowels could be distinctly seen through the attenuated abdominal walls, and everything was rejected from the stomach. The indurated mass in the right side had increased in size, having the appearance as if it were about to ulcerate. All medicines by the mouth were stopped, and hypodermic injections of morphia ordered.

The condition of the patient was the same, with slight variations, up to October 1, 1880, when word was sent that the bowels had been opened; but on examination it proved to be the accumulated residue of the beef-tea injections. On the 5th of October the patient suffered greatly from tenesmus. On examination a large hemorrhoid was found protruding. I then passed my hand up the rectum, but detected nothing. Two days after, I repeated the examination, and detected through the walls of the rectum, on the right side, a large tumor, which filled the whole top of the pelvis: it could easily be indented, but it could not be pushed aside. This on post-mortem proved to be the greatly distended lower portion of the ascending colon. Examination of the left side revealed, as I thought, a stricture just at the superior strait. On October 11, 1880, Dr. Curtin was called in consultation. The patient was then suffering the most agonizing pain. Dr. Curtin confirmed my diagnosis. A few days after, to relieve the patient from the abdominal distention, I passed an aspirator needle through the abdominal walls, which gave vent to a large quantity of air.

On Saturday, October 16, 1880, Dr. Parish saw the case with me. The patient was very low, and Dr. Parish suggested the formation of an artificial anus. This I had proposed on my second visit, but was opposed by the family; but I doubt if the operation would have been of any benefit.

The patient gradually continued growing worse. Tuesday afternoon, October 26, 1880, he had a slight passage of a clay color and very offensive. This was the eighty-seventh day from his last passage. On the morning of October 27, 1880, he passed nearly half a chamber-full of the same-colored fæces. His pulse was then 140, he was semi-conscious, and was evidently dying. Death took place on the morning of the 28th of October, 1880, after the most excruciating suffering.

Post-mortem.—Present, Drs. Hooper, Parish, Allis, and Bernardy. Dr. Allis conducted the autopsy, which was made about six hours after death. Body greatly wasted, with every appearance of death from starvation. Abdomen distended and tympanitic. An incision was made from the ensiform cartilage to the pubes, and a second along the lower border of the ribs: this brought all the intestines directly into view, greatly distended, and of a dull silver color, with the arteries greatly enlarged. Both the small and large intestines were dilated, the latter the most. The usual displacement in such cases was present,—viz., a letter U displacement of the transverse colon. A remarkable feature in the case was the pushing up of the liver, so that its lower surface was on a level with the nipple and about five inches from the lower border of the ribs.

The position of the constriction was in the left iliac fossa, above the sigmoid flexure, and seventeen inches from the anal orifice.

The kidneys and liver were examined, but no disease was apparent. The stomach was somewhat contracted, and pushed up under the sternum.

The examination was confined to the abdomen.

Thursday Evening, May 12, 1881.

The President, Dr. S. W. Gross, in the chair.

Two cases of carcinoma mammæ. Presented by Dr. C. B. Nancrede.

The two cases I have to present for your consideration this evening have been announced to be of special interest because they illustrate the varied course pursued by different cases of the same disease. In brief, their histories are as follows.

Case I.—Mrs. C., aged 32 years, mother of four children, was seen by me in consultation with her attendant, Dr. G. A. Rex, September 3, 1880, when I found the following conditions present. At the lower inner part of her right mammary gland was a hard, circumscribed tumor, of the size of a walnut, which moved with the breast tolerably freely over the pectoral muscle. Under the anterior fold of the axilla was another mass, evidently consisting of enlarged glands, which fully equalled in size the mammary growth, if it did not exceed it in bulk. No tenderness over the tuberosity of the humerus was noted. The tumor had been noticed barely three months previously, which date must have corresponded almost to its incipiency, as the patient said that when she first detected it the growth did not exceed in size a small bean. A broken corset steel had bruised the breast at this point, and the injury had led her to examine the breast. The patient was a robust, healthy woman, and had been delivered only about six weeks when she detected the tumor. Her mother was healthy, but her grandmother had died with carcinoma mammæ. September 26, 1880, I removed the whole gland, with the superimposed skin, dissected off the pectoral fascia, fat, etc., and cleared the whole axilla of its glands, enlarged or not, until the capsule of the shoulder-joint could be readily felt. Antiseptic precautions were used, and the wound healed by the first intention, except the track of the drainage-tubes. The skin was so lax —owing to the recent cessation of lactation

and the consequent shrinking of the breast—that, although the skin was extensively removed, very little tension resulted from the apposition of the cut surfaces. Over seven months after the operation the patient shows no return of the disease.

Case II.—Miss H. R., aged 52, with a clear family history, came to me from a neighboring State on November 25, 1880, with her entire left breast converted into a growth of stony hardness. The growth did not much exceed in bulk the normal gland. The skin over the growth presented a roundish ulcerated surface about an inch and a half in diameter. This ulcer showed the characteristic appearances of carcinoma ulcerans. Between five and six years ago she first noticed the tumor, but in which segment of the gland I am unable to say. The growth slowly increased, with but moderate pain. Neither before nor after the operation could any enlargement of the axillary glands be detected. No tenderness over the upper extremity of the humerus could be discovered. November 29, 1880, the growth was removed, with the whole of the investing skin, part of the pectoral muscle, fascia, fat, etc. No glands could be found to remove. By dissection of the skin from the chest-walls, the enormous wound left was reduced to about one-third and dressed with carbolized oil. The patient did well, and when last heard of had no return of the trouble, although a small central spot, owing to tension, etc., had declined to heal, but *did not extend in the slightest.* Her health improved markedly after the operation.

It is hardly necessary to indicate the points of interest in these two cases, presenting as they do such a marked contrast as to the contamination of the neighboring lymphatics, and the importance of judging each case upon its own merits, and not upon any preconceived ideas as to when we should, or should not, operate.

Dr. S. W. Gross remarked that one point had been alluded to by Dr. Nancrede which he had been at some pains to test by his own experience,—viz., the presence or absence of tenderness in the region of the greater tuberosity of the humerus in cases of carcinoma. Attention had been lately called to this by Mr. Snow, of London. In the last twenty cases of carcinoma mammæ under his care, careful examination had failed to discover tenderness over this portion of the humerus. *A priori*, such an involvement of the humerus is improbable, since it has been observed that this bone is very rarely affected in secondary cancerous disease of the osseous system. As his own experience in twenty cases totally failed to reveal such tenderness, and as the pathological fact just cited was against it, he was inclined to view the new symptom as worthless as a means of diagnosis.

Dr. Longstreth asked Dr. Gross whether any actual examination of the medulla of the bones had been made in the cases cited from an English source which would prove this supposed involvement of the marrow-cells.

Dr. Gross, in reply, said that he was unaware of any such.

Dr. Longstreth said that he had asked the question because in one specimen examined by him he thought that he had found the medulla cells affected. He would like to ask the experience of the members as to whether the amount of cells, the signs of their active proliferation, and the involvement of the surrounding tissues could be relied on as to the rapidity of the return or the likelihood of metastasis, and related several cases where he had been induced by such appearances to predict a rapid recurrence, but where the course of the cases completely refuted his opinion.

Dr. S. W. Gross, in reply, said that if Dr. Longstreth continued to examine such cases and make similar prognoses he would find his opinions justified by rapid returns and dissemination in the majority of cases. In general terms, the less connective tisue, the greater malignancy.

Dr. Nancrede remarked that he would like to relate the ultimate result of a case of somewhat similar disease, which illustrated the extreme rapidity of course pursued by malignant growths where the cells were at a maximum. The members might perhaps recall a specimen exhibited by him before this Society, about a twelvemonth since, of large spindle-celled sarcoma of the breast, which had been opened by the attending physician in mistake for a chronic abscess, so deceptive was the sense of fluctuation produced by the excessive softness of the growth and the hemorrhages occurring in its substance. In removing it, Dr. Nancrede only succeeded in saving its pseudo-capsule and one or two small fragments for microscopic examination. In four months the lungs were crammed with deposits, which terminated this lady's life in about nine months after operation, and less than one year from the first appearance of the disease.

REVIEWS AND BOOK NOTICES.

A Treatise on Bright's Disease and Diabetes. By James Tyson, M.D. Philadelphia, Lindsay & Blakiston, 1881.

Of the 310 pages of this book 226 are devoted to a consideration of the various affections which are habitually grouped together under the name of the famous London physician, and the rest are set apart for diabetes. In the Bright's group Dr. Tyson recognizes six individual affections,—acute and chronic parenchymatous nephritis, lardaceous disease, interstitial nephritis, suppurative interstitial

nephritis, and cyanotic induration. When the chapters which treat of these affections are studied, it will be found that they embody all that is known concerning the disease of which they treat. Whilst the historic side of the various subjects is not at all neglected,—the author evidently being equally well read in the literature of the past and the present,—the modern developments of the scientific and clinical aspects of the diseases have been elaborately and carefully studied, and the well-digested results given at length to the reader in a clear and agreeable form. There is at present no great English practice of medicine fully representing the science and art of the day, and comparable to the treatises of Watson and Wood as we studied them in our youthful days. Such a monograph as the present would well make a section of a general work of the old style; and perhaps it is better that the practitioner should fill his library with these brief, sententious monographs written by various hands than be dependent upon a single classic treatise, the output of one great mind.

A New Form of Nervous Disease—Essay on Erythroxylon Coca. By W. S. Searle, M.D. New York, Ford, Howards & Hurlbut, 1880.

We have read enough of the first of these essays not to want to read more. When an author believes that "the delicate and weakly may imbibe strength and vitality from rubbing at the hands of a vigorous man or woman," we think he ought to rub his own *caput* against some head which contains a little common sense. The new disease may possibly be a disease in the sense that athetosis, neurasthenia, etc., are called diseases,—*i.e.*, in being either a symptom or a condition,—but is characterized so unscientifically by Dr. Searle as to excite deserved ridicule. "A distinctive phenomenon," we are told, "is passive congestion, usually of the cerebellum only." Evidently the doctor is furnished with the double-million-magnifying gas microscope of hextra power, that the well-known Samuel Weller thought would be necessary to enable him to run up two flights of stairs, round one corner, and through a two-inch deal door, and is able, even in a negro with a thick skull, to watch the play of the blood-supply in the inmost cerebellum. It is a pity that we commoner mortals are not also possessed of so valuable an instrument.

Medical Electricity. By Roberts Bartholow, M.D. Philadelphia, H. C. Lea's Son & Co., 1881.

This is a well-put-together, handsomely illustrated treatise of over 260 pages, written in the author's popular style. Evidently a successful book; not remarkably original, but showing a thorough acquaintance with the subject; mostly sound in its teaching, but occasionally erring in the dogmatic statement of asserted truths whose character is, in truth, doubtful. Witness the account of the effects of galvanization of the sympathetic ganglia of the human neck from the outside of the body,—the statement on page 98,—"The direct application of the continuous galvanic current to the superior ganglion of the sympathetic contributes to the activity of the circulation, re-establishes it when arrested," etc.; also the assertion on page 183 as to the curative powers of galvanism in migraine.

A Text-Book of Practical Medicine. By Dr. Felix von Niemeyer. Revised Edition. New York, D. Appleton & Co., 1881.

In 1871, Prof. Niemeyer passed from his earthly labors, and the present volumes are not, in truth, the work of his hands. In 1880, Dr. Eugene Seitz edited a posthumous edition of the work, cutting and slashing, modelling and adding, until the book was scarcely more Dr. Niemeyer's work than a piebald circus-horse is a bay mare. The present volume is an attempt upon the part of Drs. George H. Humphreys and Charles E. Hackley, of New York, to make the book of Dr. Seitz resemble more closely the original work of Prof. Niemeyer. A good treatise upon the practice of medicine has been the result; but it should have been entitled "A Practice of Medicine founded upon that of the Late Professor Niemeyer."

Anatomical Studies of the Brains of Criminals. By Moritz Benedikt. Translated by Dr. E. P. Fowler. New York, Wm. Wood & Co., 1881.

This book consists of very detailed descriptions, fully illustrated by wood-cuts from photographs, of a number of brains of criminals. The brains were all more or less defective, especially in gyrous development, the fissures being accordingly abnormally large. The book is of value as a solid contribution to psychological anatomy, but will hardly interest the general medical reader.

GLEANINGS FROM EXCHANGES.

Removal of a Kidney on Account of Uretro-Uterine Fistula.—Crédé (*Archiv f. Gynäk.*, Bd. xvii. Hft. 2; *Edinburgh Medical Journal*) extirpated the right kidney in the case of a fistula the result of a parametric abscess following labor. There was a constant flow of urine from the vagina, while at the same time urine was passed in the natural way, and no fluid could be forced out of the bladder into the vagina. By means of a speculum the urine was seen to flow through the os uteri. On dilatation of the os and examination of the cavity of the uterus, a small depression in its upper right side was found, through which the urine gained access to the uterus. The operation was successful.

NEW BASE FOR OINTMENTS AND SUBSTITUTE FOR LARD.—Dr. J. B. Moore (*Druggists' Circular*, July, 1881) recommends the following:

℞ Lard, 16 troyounces;
White wax, 4 troyounces;
Cosmoline, 4 " "

Melt the wax by means of a water-bath, add the lard and cosmoline, and stir the mixture occasionally until liquefied, and, if necessary, strain through muslin. Stir the mixture constantly until cool.

The mixture should be allowed to cool at the ordinary temperature. If the refrigeration is urged by placing the vessel in cold water, as is sometimes injudiciously done, there is danger of causing irregular solidification.

BELLADONNA-POISONING SUCCESSFULLY TREATED BY PILOCARPIN.—Dr. Grattan (*Lancet*, vol. i., 1881, p. 951) was called to see a woman who had swallowed, by mistake, f℥ii f℥ii of lin. belladon. (B. P.), apparently a favorite beverage of the English lower classes, if we may judge by the number of cases where it is swallowed purposely or by accident. Dr. Grattan, after washing out the stomach, gave a hypodermic injection of one-fifth of a grain of pilocarpin, repeating the injection thrice at intervals of fifteen minutes, four-fifths of a grain having thus been given. The patient recovered.

MISCELLANY.

RABIES INOCULATED BY CEREBRAL SUBSTANCE.—Prof. Pasteur and his assistants have on different occasions, and often with success, inoculated the medulla oblongata, and even the frontal portion of one of the hemispheres and the cerebro-spinal liquid, with the product obtained by the expression of the substance of the brain of a rabitic individual. Under these circumstances the rabies has always exhibited the ordinary period of incubation. The saliva, therefore, is not the sole seat of the rabid virus, the brain also containing it, and being there possessed of a virulence at least equal to that met with in the saliva of rabid animals. Prof. Pasteur hopes to shorten the incubation of his experimental rabies, so that he will not have to wait so long to observe the effects of inoculations. He says everything is prepared in his laboratory for carrying on the study of rabies on a most extensive scale.

DR. CHARLES T. HUNTER has been appointed Demonstrator of Anatomy in the University of Pennsylvania in succession to the late Dr. Hodge, and Dr. J. William White has been appointed Demonstrator of Surgery in Dr. Hunter's place.

AFTER personal use, we can commend the Arthur Gynæcological Chair as very well made and very well adapted to its purpose.

ACCORDING to trustworthy medical reports, the Isle of Wight is in a dangerously unsanitary condition, and intending visitors are warned off by the English medical journals.

ANOTHER MASK FOR THE ODOR OF IODOFORM.—Dr. Peterson suggests a drop of tincture of musk to the ounce of iodoform, whether in a solid or a liquid form.

THE twenty-fifth anniversary of Dr. Rudolph Virchow's appointment as Professor in the University of Berlin is to be celebrated on October 13.

NOTES AND QUERIES.

AMERICAN OTOLOGICAL SOCIETY.

THE Fourteenth Annual Meeting of the Society will be held in Newport, R.I., on Tuesday, July 26. The following papers have been announced. 1. "Suggestions regarding the Treatment of Suppurative Otitis." Dr. S. Theobald, Baltimore, Md. 2. "On the Value of Operations in which the Tympanic Membrane is Incised." Dr. D. B. St. John Roosa, New York, N.Y. 3. "On the Tuning-Fork in Diagnosis." Dr. D. B. St. John Roosa. 4. "On the Use of Calcium Sulphide in Inflammatory Diseases of the Ear." Dr. Samuel Sexton, New York, N.Y. 5. "The Relative Frequency of Disease of the Right and the Left Ear." Dr. R. C. Brandeis, New York, N.Y. 6. "Removal of Foreign Body by Disarticulation of the Auricle." Dr. J. Orne Green, Boston, Mass. 7. "Malignant Growth in the Naso-Pharynx, with Early Aural Symptoms." Dr. C. H. Burnett, Philadelphia, Pa.

Secretary,
DR. I. I. B. VERMYNE,
80 Spring Street,
New Bedford, Mass.

THE American Surgical Association will hold its first regular meeting at the Oriental Hotel, Coney Island, September 13, 14, and 15. Papers are expected from several gentlemen.

THE Fifth Annual Meeting of the American Dermatological Association will be held at Newport, R. I., on August 30 and 31 and September 1.

OFFICIAL LIST

OF CHANGES OF STATIONS AND DUTIES OF OFFICERS OF THE MEDICAL DEPARTMENT U.S. ARMY FROM JULY 10 TO JULY 23, 1881.

SIMONS, JAMES, LIEUTENANT-COLONEL AND SURGEON.—Granted leave of absence for one month. S. O. 120, Department of the East, July 15, 1881.

AINSWORTH, F. C., CAPTAIN AND ASSISTANT-SURGEON.—Relieved from duty at Fort Clark, and assigned to duty as post-surgeon at Fort McIntosh, Texas, relieving Assistant-Surgeon Gorgas. S. O. 90, Department of Arizona, July 14, 1881.

MAUS, L. M., CAPTAIN AND ASSISTANT-SURGEON.—Now awaiting orders in Washington, D.C., to report in person to Commanding Officer, Davids' Island, N.Y.H., for temporary duty at that post. S. O. 158, A. G. O., July 13, 1881.

COMEGYS, E. T., CAPTAIN AND ASSISTANT-SURGEON.—Now awaiting orders at Cincinnati, O., to report in person to Commanding Officer, Columbus Barracks, O., for temporary duty at that post. S. O. 158, C. S., A. G. O.

GARDINER, J. DE B. W., CAPTAIN AND ASSISTANT-SURGEON.—The extension of leave of absence granted him in S. O. 59, March 14, 1881, from A. G. O., further extended six months. S. O. 157, A. G. O., July 12, 1881.

SHANNON, WILLIAM C., CAPTAIN AND ASSISTANT-SURGEON.—Assigned to duty with escort to the commission from Fort Bridger to the Uintah Agency. On return of commission to Bridger, to rejoin his station, Fort D. A. Russell. S. O. 62, Department of the Platte, July 6, 1881.

GORGAS, W. C., FIRST-LIEUTENANT AND ASSISTANT-SURGEON.—When relieved at Fort McIntosh, Texas, to report to Commanding Officer, Fort Duncan, Texas, as post-surgeon. S. O. 90, C. S., Department of Texas.